VOL. 177 No. 4 AMERICAN OCTOBER 1, 1952

Gas Journal

DEC -9 1952

1892 to 1952
SIX DECADES OF GAS CONTROL

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SERIAL RECORD
DEC 11 1952

● Sixty years ago Reynolds Gas Regulator originated its first gas control in the famous Little Giant Regulator. Many thousands of the original units are still in service. Regardless of where accurate gas regulation is needed—in the line—at the station—for industrial plants—or in the home, there is a superior product by Reynolds. Experienced Executives and skilled Engineers have come to know that the name Reynolds symbolizes a manufacturer who understands the needs of the Gas Industry.

REYNOLDS GAS REGULATOR COMPANY
ANDERSON, INDIANA, U. S. A.

MUELLER

ANNOUNCES

THE NEW LubOseal

GAS METER STOP

Patent Applied For

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Plain head H-11170 Lock wing H-11175
Sizes 3/4" through 2"

LubOseal . . . the life-time pressure-proof gas stop you've been waiting for! It's an all-new gas meter stop engineered for today's . . . and tomorrow's . . . higher pressures. WON'T FREEZE . . . the only stop in which all contact surfaces are lubricated by the stop's grease system. By actual tests, LubOseal stops performed perfectly after 20 times the number of operations that would cause ordinary stops to leak or turn hard. TAMPER-PROOF . . . stem can't break, plug won't blow out. Precision lapped ground key stop assures tight fit. AUTOMATIC LUBRICATION . . . proper grease film is constantly maintained for an extended time. FACTORY ADJUSTED . . . proper adjustment is permanently fixed at the factory. HOLDING AND TURNING QUALITIES EASILY RESTORED . . . addition of grease under pressure through drilled hole restores holding and turning qualities. Modernize and protect your installations with LubOseal Gas Stop. Call your Mueller representative today.

Visit us at the A. G. A. Convention in Atlantic City. Booths 825 and 826.

MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

RIGHT... *Before Your Eyes*

Measure Better, Serve Better,
THE ROCKWELL WAY

Gas meters are your company's silent representatives in the home. A major part of your good will depends on the performance and accuracy of your meters.

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ROCKWELL

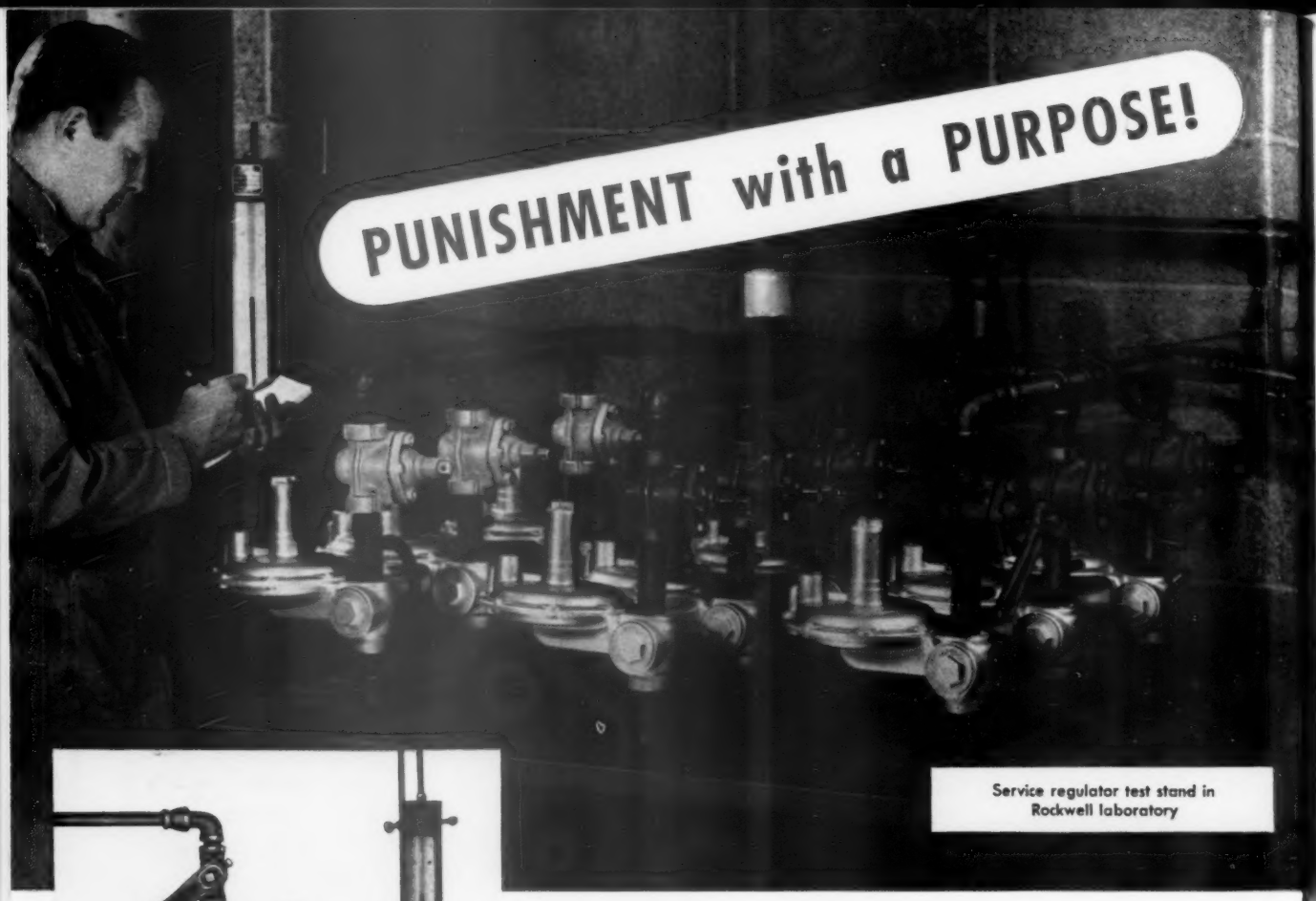
You Can RELY ON ROCKWELL

It's What's Under the Ca THAT COUNT

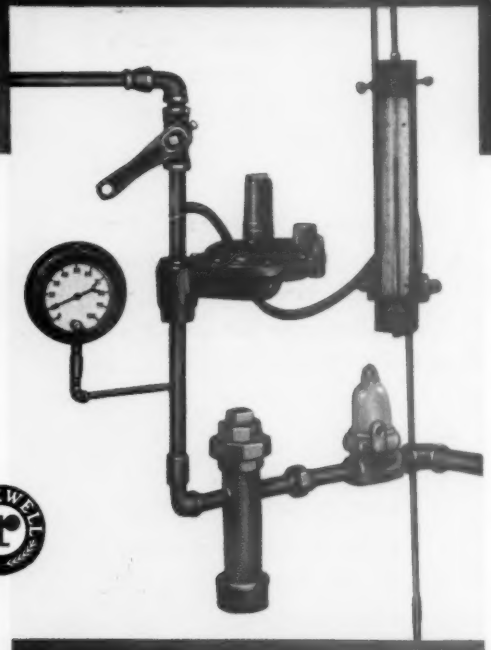
Mechanical improvements in Rockwell tin meters include a w case to prevent diaphragm contact, heavier flanges for n soldering area, larger channels and ports for increa capacity, large diameter flag wire, ribbed flag, a hea tangent, brass links and a chrome plated crank—all of w contribute to better performance and longer meter life.

ROCKWELL TIN GAS METERS

Made in Both 5LT and 10LT Models—Capacity Range from 150 CFH to 500 CFH



Service regulator test stand in Rockwell laboratory



This apparatus is used to test new valve materials for their resistance to various solvents. The solvent is placed in the lucite mixing chamber from which it is pumped by solenoid force in and through the regulator valve chamber. This test can extend for months during which period the degree of pressure required to close the regulator valve is periodically recorded.

MILLION CYCLE OFF-AND-ON TESTS

Prove and Improve ROCKWELL SERVICE REGULATORS

The test stand has been designed to *abuse* service regulators—deliberately. In it, automatic solenoid valves open once every minute to throw full line pressure on the regulators. After 10 seconds, the solenoids close. In this test, valve pads, diaphragms and bearing materials are subjected to 24 hour a day service under the most brutal on-and-off conditions. Out of the testing comes the valuable data that enables us to prove—and to constantly improve the regulators we build for you. For full details about the better values in Rockwell service regulators, write for bulletin 1026.

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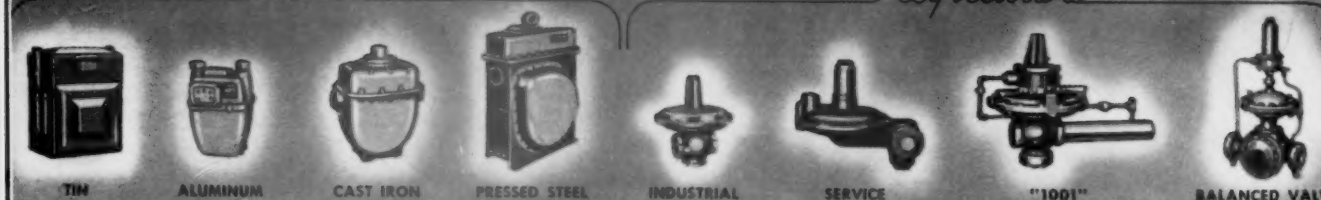
Meters *Regulators*



There's a ROCKWELL METER & REGULATOR for every use

Specialist in the Field

AND SPECIALISTS, in the field of Gas Odorization, are the CAPTAN people. Our large staff of Technical Engineers are ever alert to all odorization problems. Years of research and experience by our organization have led to the development of **6** different CAPTANS. One of these CAPTANS can solve your odorizing problems.

In this age of Specialization, the Natural Gas Odorizing Company, Inc., is the only company solely engaged in the manufacture and sale of gas odorants. Our singleness of purpose has enabled us to develop methods and materials for the best and most economical odorization of your gas.

Call for the CAPTAN Man today. Let him relieve your odorizing headaches. His services—without charge or obligation—are another of those "extras" that are yours for the asking when you use CAPTAN, the Superior Gas Odorant.

NATURAL GAS ODORIZING CO., INC.

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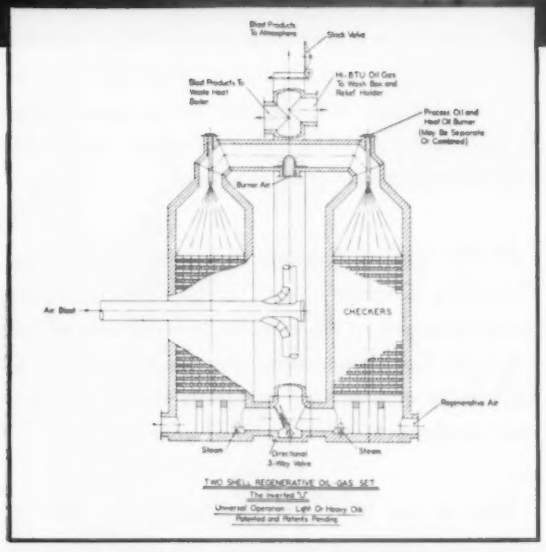
OIL GAS GENERATION at its best

GASMACO'S TWO SHELL SET



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Universal Operation - Light Or Heavy Oils
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Dependable—positive, quick-starting, 24-hour operation.

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Has been field proved during the past four years in rugged, constant-duty plant service. Ask the operators who live with it; ask the companies who profit from it.

Other Gasmaco oil gas processes and apparatus available to fit varying conditions.

Whatever your gas plant requires, Gasmaco has it!

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Gas Plant Equipment and Industrial Furnaces

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HAMILTON, ONTARIO

AMERICAN Gas Journal
ESTABLISHED 1859

VOLUME 177 OCTOBER 1, 1952 NUMBER 4

This month...

In our frequent forays through ancient volumes of AMERICAN GAS JOURNAL of bygone days we have often been impressed by the singleness of purpose that actuated our editorial precursor of ninety years ago. He hewed to the line of gas company interest to such an extent that even the national cataclysm of a civil war received only an occasional scant paragraph, and that usually dealing with some Rebel raid on the property of a gas utility in one of the states bordering the Mason-Dixon Line.

For the benefit of our successor of ninety years hence we feel that we should record our political leanings on the eve of a presidential election that is marked by the unusual feature that both candidates have promised to Throw the Rascals Out. After long and prayerful deliberation we have decided that we shall mark our ballot for the Republican party candidate, Dwight D. Eisenhower, not because he is the better man, but in the simple conviction that no candidate who permits himself to be beneficiary of the low political buffoonery of Harry Truman can ever be expected to rise above the sordid cultural morass in which his presidential aspirations have their roots.

• • •

A recent analysis of our circulation gains over the past three years shows that paid subscriptions among operating gas men have increased 186 per cent since we set about the job of rehabilitating the old AMERICAN GAS JOURNAL. Subscriptions among sales department personnel, on the other hand, have increased only 79 per cent. We sometimes ponder with misgivings the Messianic streak in our publishing character that leads us to devote so much attention to the merchandising of gas service. Yet, we cannot escape the inner conviction that unless gas service is merchandised, and merchandised far better than is being done today, the time will come when there will be little need for any further advance in the technologies of the industry.

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Charles R. Bellamy · Technical Editor

Arthur Rohman · Western Editor **John F. Falvey · Financial Editor**

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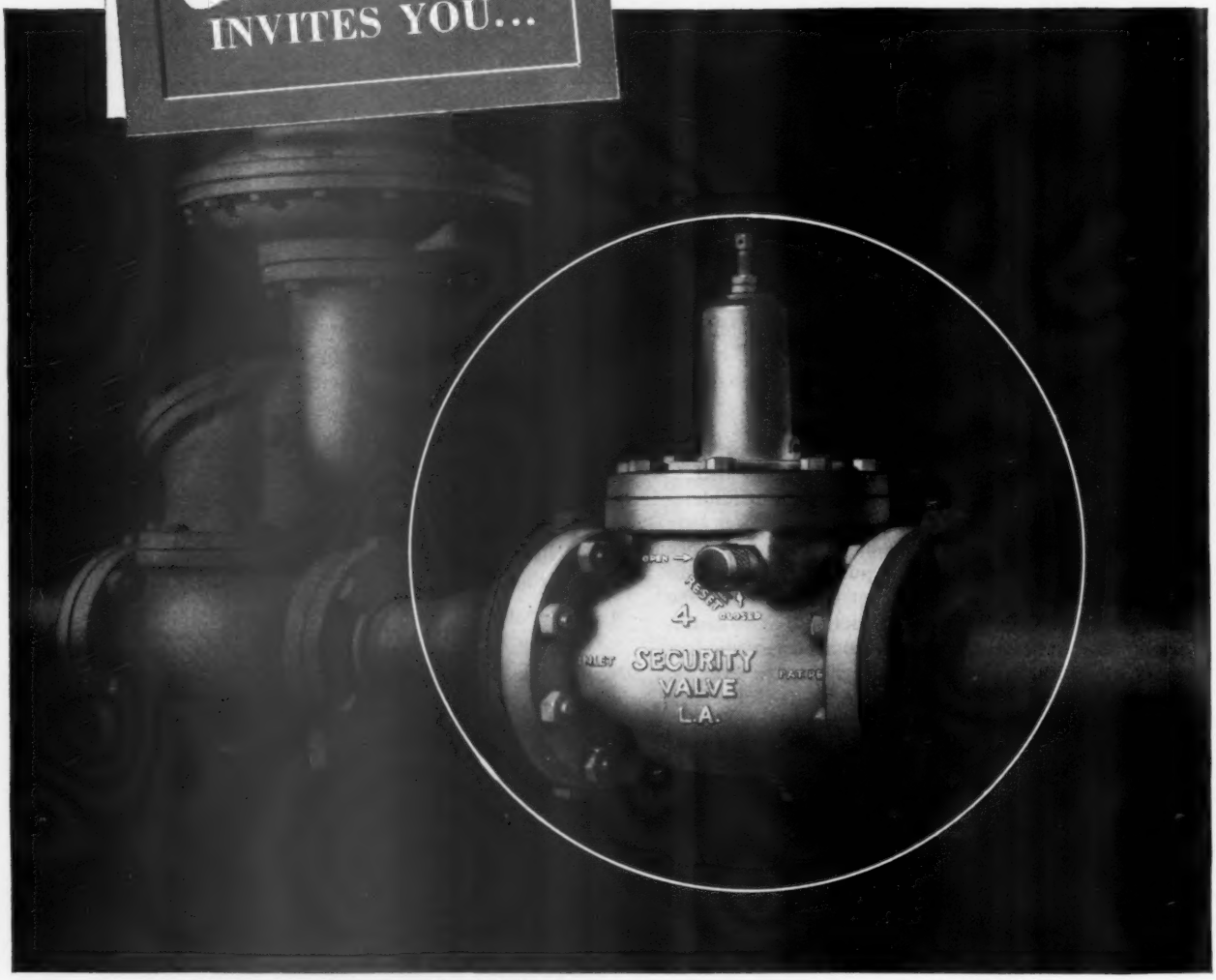

Installation photo of Security Model "IP" (closes on increase in pressure) Automatic Shut-Off Valve

SECURITY VALVE CORP. *cordially invites you to visit the display of our complete line of AUTOMATIC SHUT-OFF VALVES at the 34th Annual Convention of the American Gas Association to be held in Atlantic City, New Jersey, Oct. 27th to 30th, 1952. To be exhibited at the booth (No. 623) of our Eastern Representative:* MULCARE ENGINEERING CO., INC. *53 Park Place, New York 7, N. Y.*

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410 SAN FERNANDO RD. • LOS ANGELES 31 • CALIF. • PHONE: CAPITOL 6191

See you at ATLANTIC CITY!

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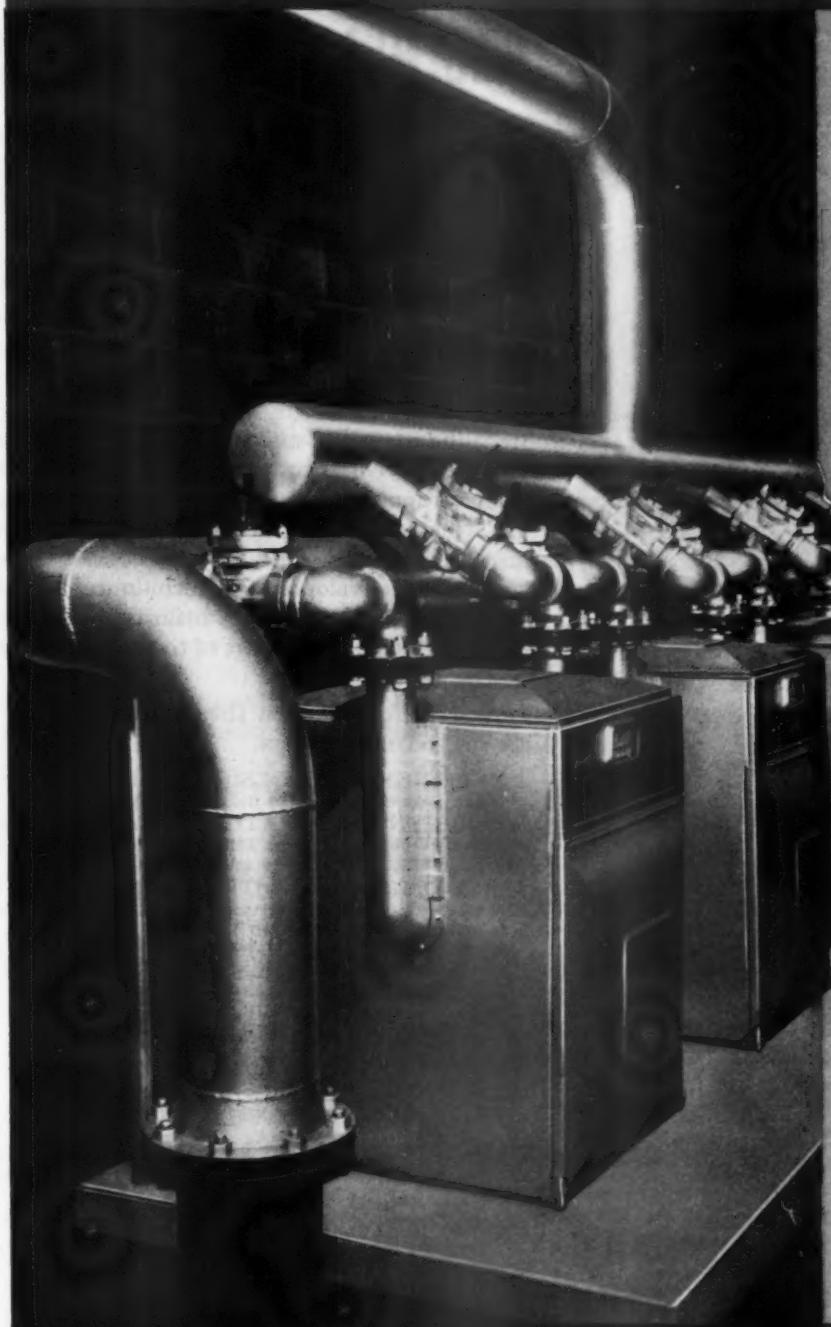
at lowest unit cost per year



In industrial installations and in millions of residences, utility service records show the outstanding performance of American® Tinned Steelcase Meters in all points of comparison—accuracy, ruggedness, low maintenance cost and long life.

For more than 115 years, American Meter Company has pioneered with such improvements as Soldered Seal index boxes, valveseats and crank bearing cast into valve tables, self-lubricating porous bronze bearings, smooth sliding valves, adjustable tangents, and many others, which have made displacement meters the precision instruments they are today.

American Meter Company continues to set the pace in meter development thus maintaining its leadership in metering dependability—always your first choice for *"Sustained accuracy at lower cost."*

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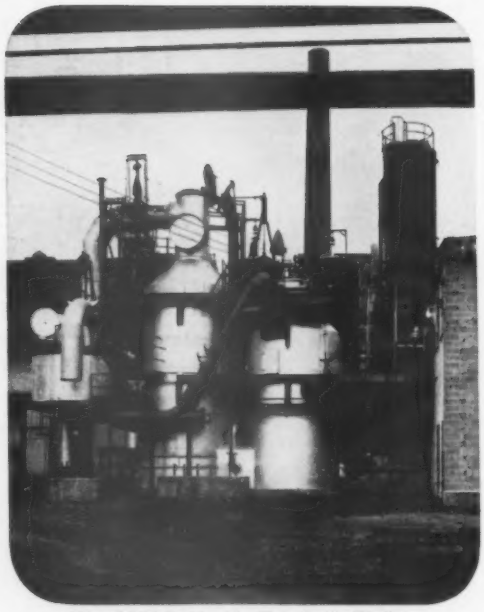
AMERICAN METER CO. MEASUREMENT ENGINEERS

AMERICAN METER COMPANY

A COMPLETE SERVICE for



The U.G.I. Cyclic Catalytic Reforming apparatus for East Gas Works, Rochester Gas and Electric Corporation, Rochester, New York.

Incoming Station, Waterbury Plant of The Connecticut Light & Power Co., Berlin, Connecticut.

GAS PLANT EXTENSIONS-

The services now being furnished by United range from engineering design only to complete construction management. The work includes: U.G.I. Cyclic Catalytic Reforming apparatus; oil gas sets; liquified petroleum gas plants; plant natural gas facilities for receiving, handling and mixing; thermal reforming equipment; pipe lines and gas mains; distribution system extensions; and many others.

This scope of activities is considerably changed from the work that met the needs of the industry only a few years ago, particularly the work that we have done for thirty companies taking natural gas. Gas pipe line work has been resumed from an earlier period. The CCR Process has been started and developed. The techniques of oil gas production and natural gas utilization have been further developed as a part of the expanded needs of the industry.

In the performance of these services, United offers:

EXPERIENCE IN DESIGN: United has over 60 years' experience in gas industry construction.

EFFICIENT APPARATUS: United has pioneered major developments in city gas and synthesis gas production, catalytically and thermally.

ECONOMICAL CONSTRUCTION: United has large well-organized forces for natural and manufactured gas construction work.

EXPERIENCE IN OPERATION: United has experienced plant operators for securing most efficient results from apparatus.

UNITED ENGINEERS

NEW YORK 17

WITH A BACKGROUND

all GAS CONSTRUCTION needs

PIPE LINES - GAS MAINS

United's experience in gas main and other pipe line construction covers many years of handling important projects for the gas industry. This experience includes the engineering and construction of lateral pipe lines, distribution main extensions, river crossings, and related work.

The services provided by United are complete, highly flexible, and may be adjusted to meet your specific needs—assisting your own department and working under its direction, assuming full direction of all or any part of the operation.

For a typical pipe line job
United performs these functions:

Develop engineering design, assist in selection of right-of-way or route, make strip maps.

Prepare specifications, make estimates of cost, secure bids and make recommendations.

Purchase and expedite delivery of all materials.

Inspect work, supervise work to the degree desired.

No matter what your project, we invite you to share our experience and facilities as designers, constructors and consulting engineers.

Gloucester Gas Light Company, Gloucester, Mass. Three and one-half miles of 8-inch lateral main.

The Connecticut Power Company, Hartford, Conn.—Stamford main. Nine miles of 10-inch gas main.

& CONSTRUCTORS INC

PHILADELPHIA 5 **CHICAGO 2**

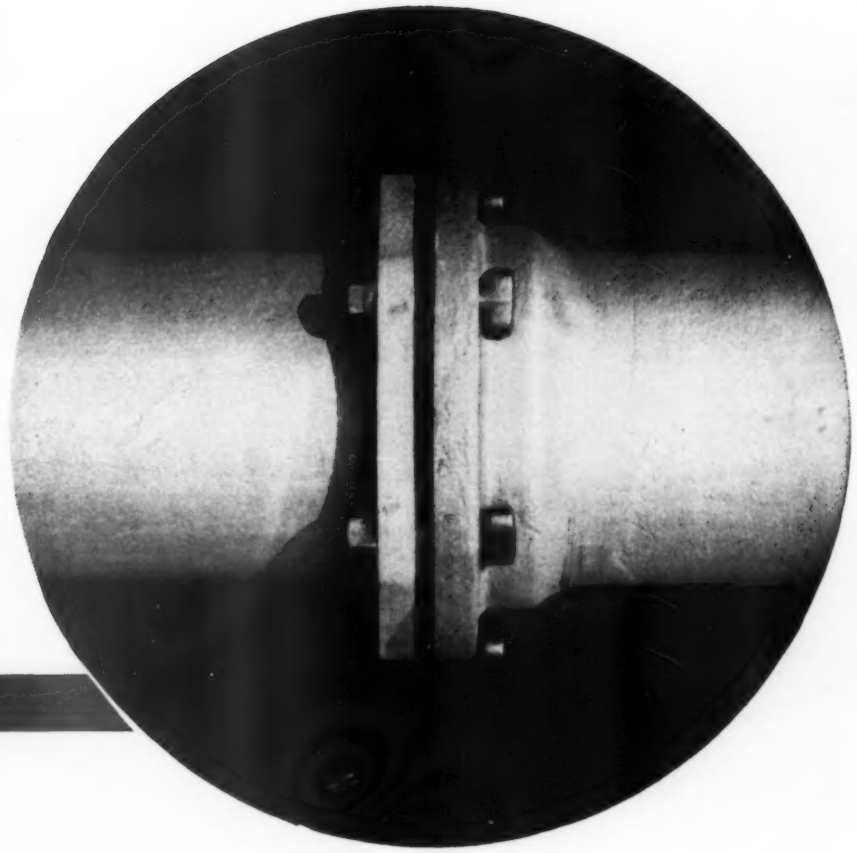
OF OVER SIXTY YEARS' EXPERIENCE

When you say that a gas main has long life and bottle-tight joints, you say it all. Gas mains installed a century or more ago, and still in use, prove that cast iron pipe has *long life.* They also testify to the serviceability of the bell-and-spigot joint. Mechanical joint cast iron pipe, installed over the past quarter-century, proves that mechanical joints are *bottle-tight* for all types of gas and at high pressures. Mechanical joint cast iron pipe has certain other advantages. More footage can be laid per day with minimum equipment—with less delays in wet weather and less difficulty with wet trenches—and with lower labor cost. Cast Iron Pipe Research Assn., T. F. Wolfe, Managing Director, Peoples Gas Bldg., Chicago 3.

● Unretouched photograph of a cast iron gas main installed over a century ago by Hartford Gas Company, Hartford, Conn.

CAST IRON ®

● Many important gas utilities have standardized on standardized mechanical joint cast iron pipe for all types of gas at low, intermediate and high pressures.



STANDARDIZE ON

CAST IRON

STANDARDIZED MECHANICAL JOINT

PIPE

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Booths 725, 726, 813, 814

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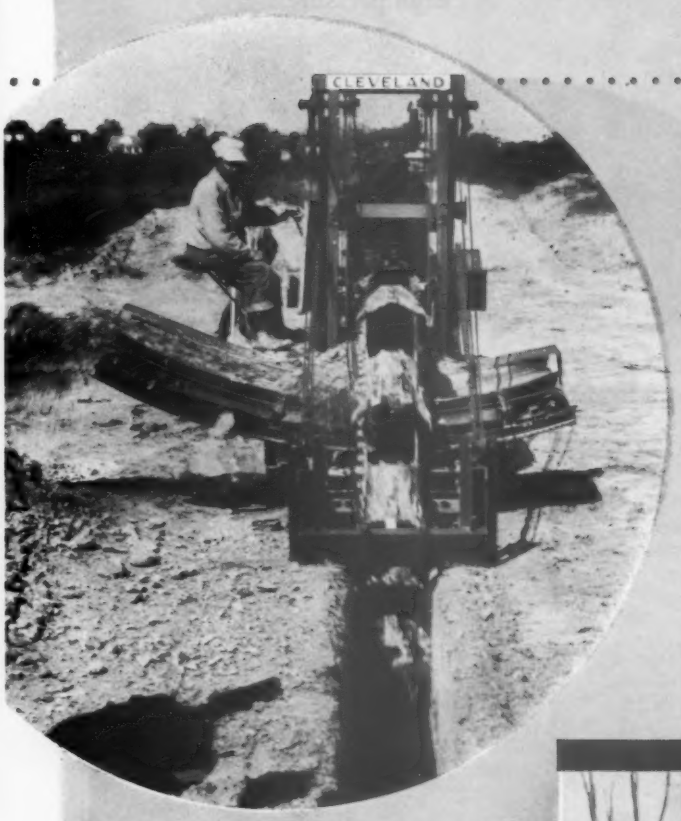
a pair of Proved Performers



The Cleveland Baby Digger

Keeping pace with gas industry requirements for over a quarter century, the Baby Digger continues to earn outstanding popularity in distribution trenching. Its record speaks for itself.

The Cleveland 80

With only one man, the 80 lays pipe — fills trench — tamps fill — effects outstanding savings. Gas industry users demanded its re-introduction. That's proved performance.

We'll welcome you, too, at our headquarters in Haddon Hall

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THE CLEVELAND TRENCHER CO.

Pioneer of the Modern Trencher

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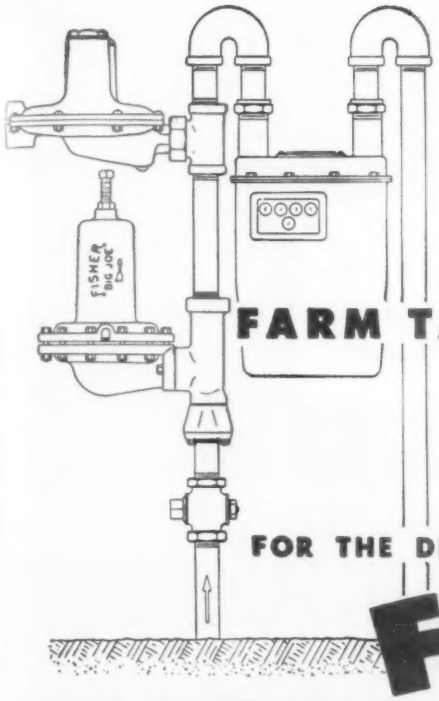


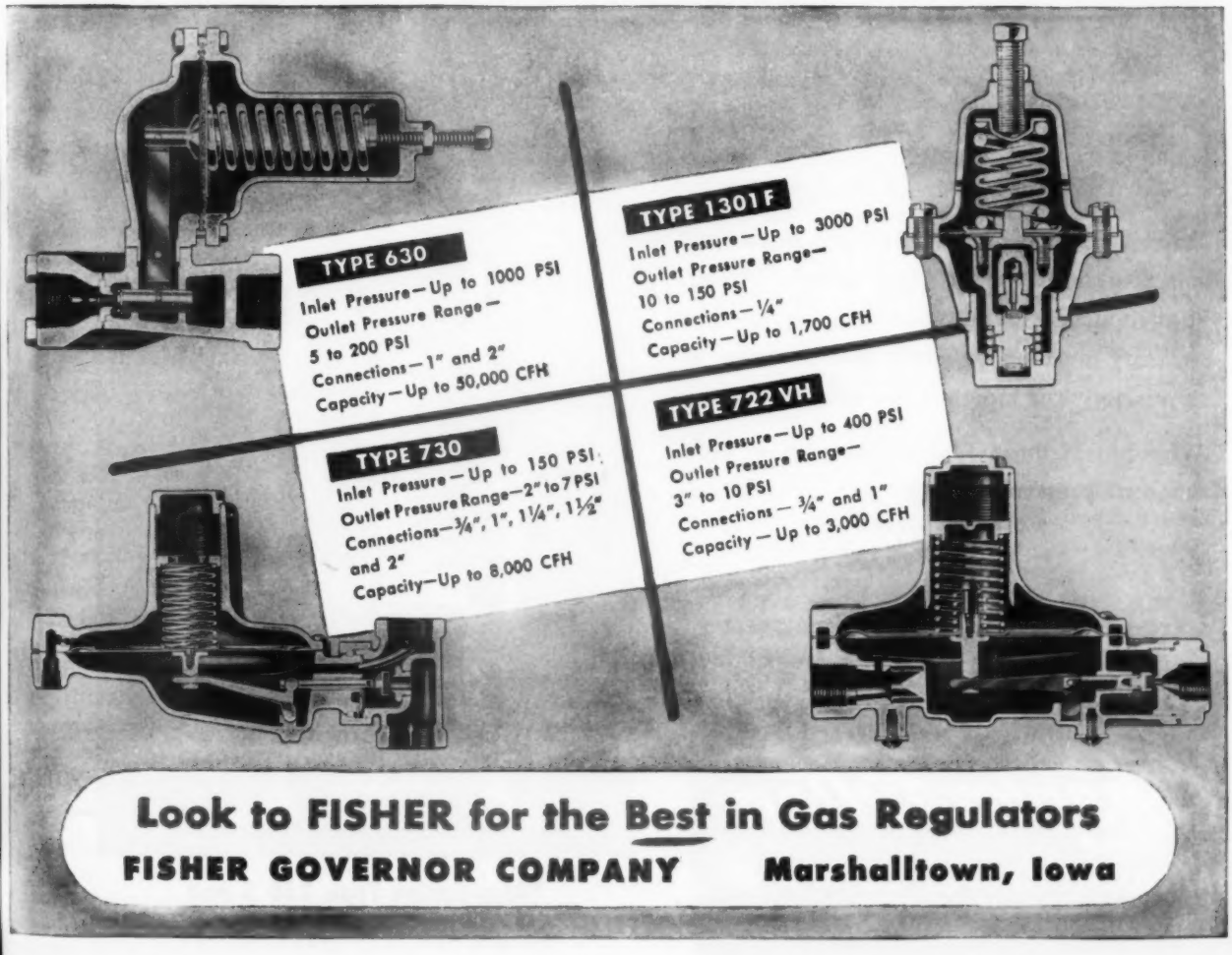
FARM TAPS AREN'T ALL ALIKE

Differences in high pressures and in customer needs dictate the equipment to be installed

FOR THE DIVERSE REQUIREMENTS INVOLVED

FISHER®

WILL SUPPLY YOU WITH THE REGULATOR EQUIPMENT BEST SUITED TO THE JOB



Look to FISHER for the Best in Gas Regulators

FISHER GOVERNOR COMPANY Marshalltown, Iowa

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Booths 725, 726, 813, 814

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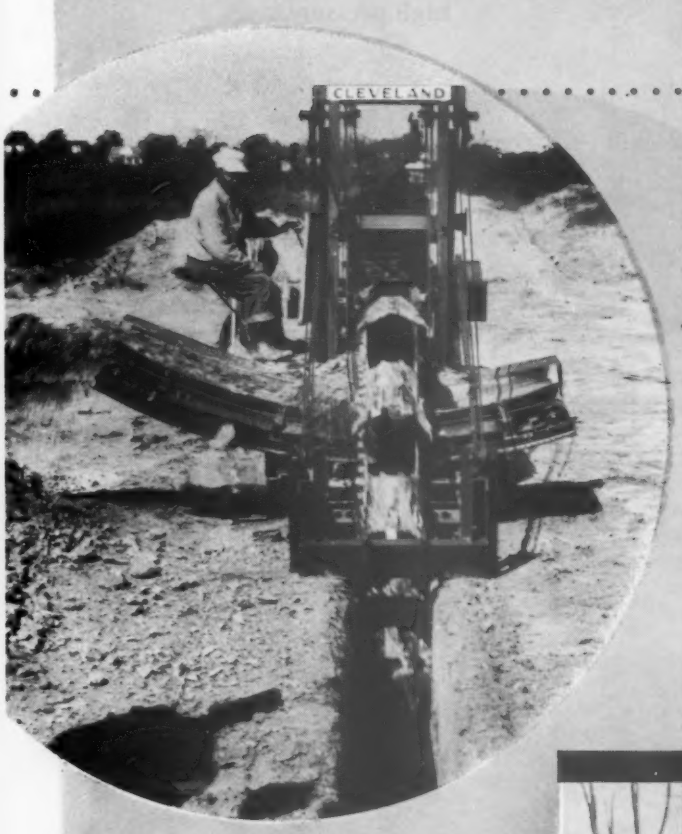
a pair of Proved Performers



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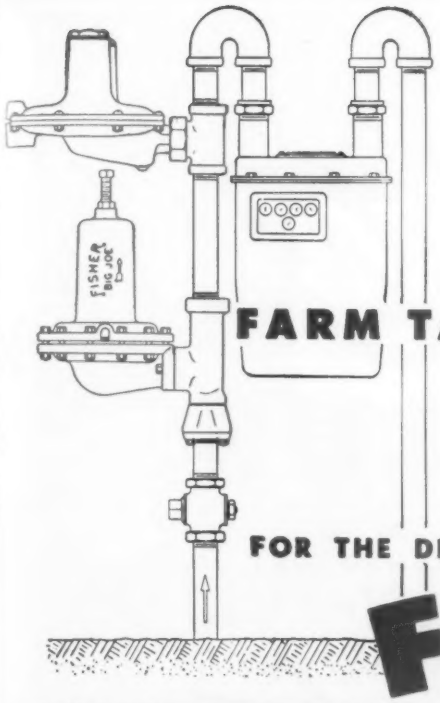

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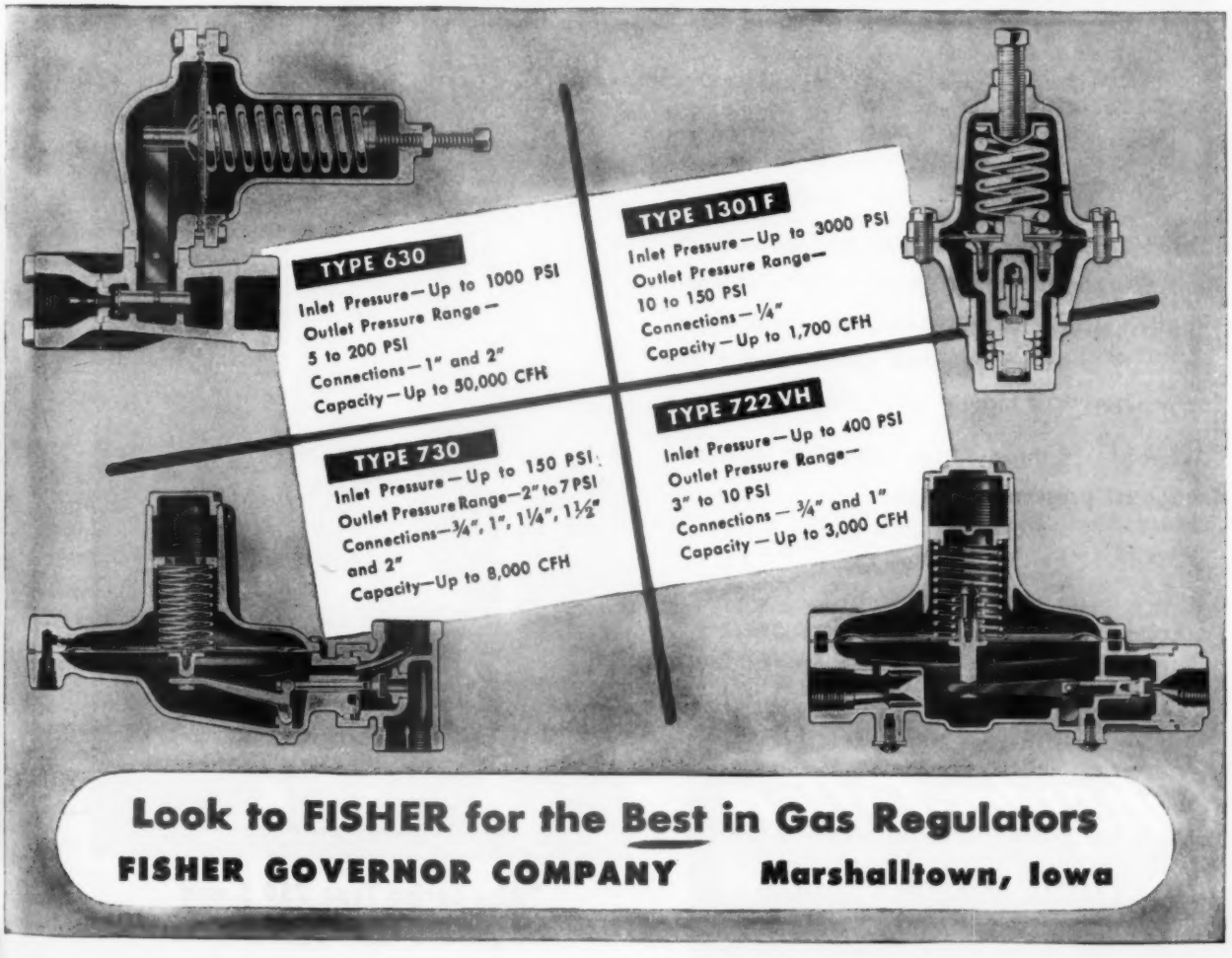

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Safety PLUS with CHAPLIN-FULTON Safety VALVES

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- RUGGEDNESS
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Safety plus features have always been built into Chaplin-Fulton's rugged Safety Valves. Positive action, a tight seal, and large flow capacity add up to good performance at surprisingly low maintenance cost.

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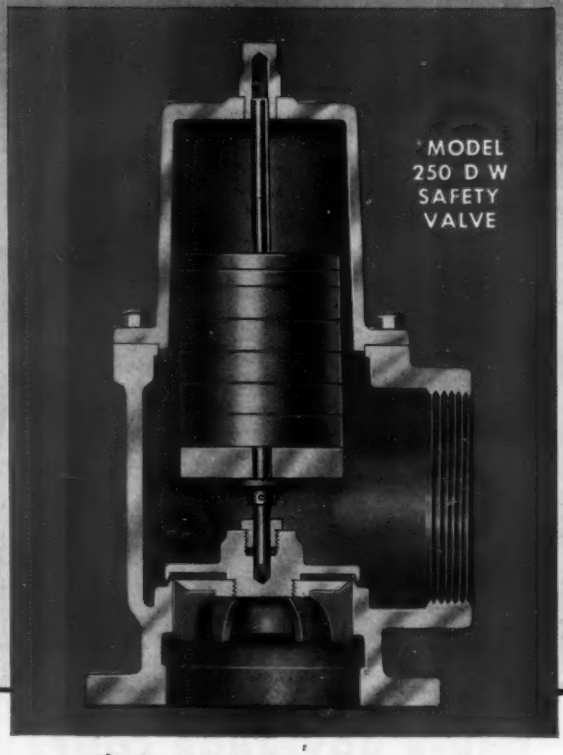

*Also Spring Type 250 S and Weight and Lever Type 250WL

ACCURATE CF MFG. CO. DEPENDABLE

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Chaplin-Fulton
MANUFACTURING COMPANY
Pittsburgh 25, Pennsylvania

Editorial:

Not on the Agenda

BY THE TIME these opinionated dispatches reach the eyes of our numerous paid subscribers, situated as we often say in every nook and cranny of this Nation, the 34th annual convention of American Gas Association will be getting under way in Atlantic City. And accompanying if, indeed, not overshadowing it, will be that biennial binge in promotional abandon, the GAMA exhibition of appliances, equipment, accessories and assorted gadgetry that manufacturers hope to sell to, or through, or maybe in spite of the gas utility industry. Everything will be bigger and better than ever before; a good time will be had by all.

Since the formal transactions of these meetings are assured ample reportorial coverage in the trade press, before, during and after the convocation, and since everything seems to be rolling in routine fashion to our own news and special features departments, we shall address these ruminations to a consideration of interesting-but-neglected items of agenda that we believe will *not* be aired in open forum:

If Winter Comes. An apprehensive discussion led by any responsible gas utility officials of the New England or Atlantic Seaboard areas who have gone all-out for straight natural gas, demolished their gas plants, oversold on house heating and now read, with numbing incredulity, recent meteorological predictions that the Winter of 1952-53 will be the coldest in a decade.

Who's Serving Who (or Whom). A psychological seminar on the attitude of the natural gas transmission companies with respect to: (1) recognizing any responsibilty for meeting the peak load problems of the distributing utilities to whom they sell gas; (2) attempting to hold their city gate prices to those included in their preliminary estimates—and on which local gas companies based their plans for conversion to straight natural gas; (3) insertion in gas supply contracts between pipeline companies and local utilities of a penalty clause for failure to deliver gas at the contract volume; and (4) assuming a share of the cost of national promotion of gas service, at least moderately commensurate with their own annual revenues.

Where Were We on LPG. A rueful review of the growth of the butane-propane industry as a plumbing and hardware dealer operation instead of under gas utility control, with a backward look at the lost opportunity for extending gas service beyond existing mains temporarily as a bottled gas operation, pending the day when new distribution lines would be economically justified.

Wish You Were Here. A memorial service to the once simon-pure exclusively-gas appliance manufacturers who have strayed off to other fuels where they saw aggressive promotion, vigorous merchandising, and a chance to make a dollar on electric ranges. Followed by a survey and predictions on the trend in gas-fired refrigerators.

Whispering Hope. Presentation of a bibliography and briefs covering one hundred thousand words of discussion over the past ten years on the need for a "60 cycle 110 volt" standard gas, with Btu content, specific gravity and burning characteristics all uniform. A one word summary of what has been accomplished to date in this direction.

Who'll Be Alive in Fifty-Five. A clinical consultation on the condition of the gas range industry as the only major durable goods classification in household appliances that is operating below pre-War levels in sales, with a realistic decision on the question of whether or not both the gas utilities and range manufacturers want the cooking business bad enough to put up an intelligent fight for it.

Let's Face It. A strategy meeting, limited to companies that are caught in the regulatory time lag between applications for rate increases and their partial approval by state commissions, with major consideration of the novel proposition that better selling of their service could make up in revenue the difference between all that they ask for and the little they know they are going to get, in new tariffs.

What Price Conversions. A reexamination of the feasibility of converting old and obsolete appliances from manufactured to natural gas at $15 per meter, with *ex post facto* consideration of what half that amount per customer, spent on promotion, might have produced in the sale of modern new ranges, refrigerators and water heaters. Authentic case histories of the number of customers going from gas to electric cooking in newly-converted manufactured-to-natural gas areas.

What's in It for Us. An informal post-convention consolation session in which GAMA exhibitors balance the million dollars they have spent on the 1952 appliance and equipment show against the measurable returns in: (1) public acceptance, (2) accelerated gas company sales effort and (3) increased dollar volume for 1953.

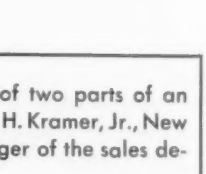
We do not imply that these disconcerting trivia should be accorded program space at the annual convention of American Gas Association, but we do anticipate that their substance will be the subject of many a lively cloak-and-friendship room discussion. Within the limitations imposed by time, place and sheer literary lassitude, we shall endeavor to report our reactions in future chronicles on this page.

Elliott Taylor

Safety in Utility LP Gas Plants Depends on Basic Engineering and Sound Construction

by William H. Kramer, Jr.
New York District Manager, Sales
Phillips Petroleum Company

This is the first of two parts of an article by William H. Kramer, Jr., New York district manager of the sales department for Phillips Petroleum Company. He is in charge of the sale of LP gas and the sale and engineering of LP gas equipment and installations. Before joining Phillips Petroleum Company, he spent ten years in the production and engineering of power equipment. Mr. Kramer is a registered professional engineer in New Jersey and Pennsylvania and is a member of American Society of Mechanical Engineers, New England Gas Association, New Jersey Gas Association and Society of American Military Engineers. The second part of this article will be in the November issue of American Gas Journal.



SAFETY in liquified petroleum gas installations at utility, industrial and gas distributor bulk plants depends directly upon basic engineering principles. In turn, safe operations with LP gas are essential to company economics and if sound public relations are to be maintained, in view of the apparently-growing realization, by the public, of the potential dangers.

A safe installation is designed and constructed not only in accordance with established rules and regulations but also in accordance with good practical engineering.

Six basic standards and regulations are recognized in designing and constructing LP gas installations:

1. National Fire Protection Association Pamphlet No. 58.
2. National Board of Fire Underwriters Pamphlet No. 59.
3. Association of American Railroads Circulars.
4. Local ordinance (fire marshal or similar authority).
5. State laws.
6. Insurance carrier.

This list can be expanded to good advantage from the authoritative literature of other groups that are concerned with the production, transportation, storage and utilization of LP gas.

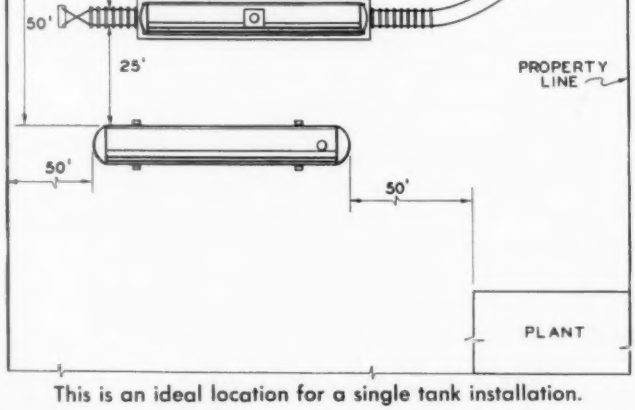
Location of LP gas storage

Maintaining the principle that safety is the primary consideration, storage location can be determined by relatively simple basic factors. A level site that is at least 50 feet from any building and 50 feet from a property line can be considered adequate for a single tank installation of either 18,000 or 30,000 gross gallons capacity.

At the same time, other factors to be considered are:

1. Future plant and storage expansion so the above distances can always be maintained.
2. Storage area to be isolated from plant driveways.
3. Storage area to be isolated from other plant services.
4. Providing adequate space for a tank car unloading spot, since this spot should maintain the same 50-foot limitation with respect to buildings.
5. Nearness to streams or rivers that may flood the area.
6. Storage to be located away from residential area, to the extent that conditions permit.
7. If other plants are around your fence line, the tank should be located in the least hazardous spot. Slope of ground at the storage area should be considered.
8. Economy.
9. Ease of operation.
10. Maintenance.

All factors in the determination of storage location must be considered in proper balance. If the plant site is not safe, it should not be considered. If it is not economical, the project should be



This is an ideal location for a single tank installation.

abandoned. And, if it is not to be properly maintained at all times, the plant itself will not be safe.

In multiple tank installations, all the factors mentioned for the location of single tank installations are to be adhered to and the additional space and distance requirements outlined in National Board of Fire Underwriters Pamphlet 59 must be followed.

If the recommended distances, with respect to location, cannot be maintained, the inspection department having jurisdiction might well require some type of additional protection. These requirements should be ascertained, definitely, during the early planning stages.

Storage tank foundations

Foundations for LP gas storage tanks must of necessity be sound and free from the danger of subsequent settling action. It is generally unsafe to judge the strength or soundness that can be obtained in foundations from surface appearances. A knowledge of sub-surface formations and the possible presence of any substrata that will give trouble is essential. Where any doubt remains, in connection with the soundness of the foundation, it may be advisable to employ the services of a competent consultant.

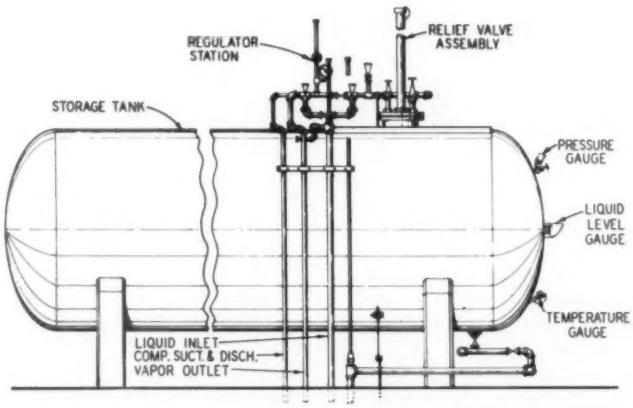
The bearing area of spread footings must be designed with respect to the bearing capacity of the soil so that the fully loaded tanks will not exceed that capacity and, in accordance with good engineering practice, an adequate factor of safety should be included. Such a condition will consider the weight of the tank, the liquid load (weight of water to fill tank), weight of the piers, weight of the footings and the maximum overburden.

Thickness of reinforced concrete spread footings and the reinforcing required will be determined by shear and flexural stresses in the usual manner as prescribed by American Concrete Institute code for design of spread footings.

Footings for multiple tank installations may be placed separately under each pier or may be placed as a continuous strip under each line of piers. If the strip footing is used, the segment of footing between piers should not be considered as load-bearing.

When footings are properly designed and soil tests show that no settlement will occur, the continuous footing has no structural advantage over individual footings.

All footings must be carried below the point of maximum frost penetration to prevent the possibility of heaving from frost actions. These depths can be determined accurately from local information and, in the case of gas utilities, it is expected that the information will be on hand.



This standard 30,000 gallon propane tank is equipped with a standard 18" bottom connection, and pressure gauge, manway opening, a 2" bottom connection, and pressure gauge, liquid level gauge and temperature gauge connections on the front head.

Piles may be necessary

Poor soil conditions may necessitate piling or other unconventional footings. This precaution should be taken if it is found that the soil is not capable of carrying spread type footings. Also, piling may be advisable where excessive excavation is necessary to reach a soil with suitable bearing capacity. Piling may be either treated-wood or concrete, depending upon site conditions. Concrete pile caps are required on either type and may be placed separately under each pier or as a strip.

Piles in a cluster design under each pier should provide for the even distribution of the load to the piles, and clusters should have a sufficient number of piles under each pier to prevent tipping due to longitudinal movement of tanks.

Reinforced concrete walls are used most commonly in piers supporting horizontal tanks. In multiple tank installations, the piers may be placed individually or continuously under the line of tanks. With properly designed footings and soil conditions, they should not produce settlement. The continuous pier has no structural advantage over the individual pier.

Concrete piers should be reinforced both horizontally and vertically with the minimum of cross section area of steel as prescribed by American Concrete Institute code for walls. Vertical reinforcing is to be continuous with that in the footings. Where the tank saddles are to be formed as integral parts of concrete piers, diagonal bars should be used.

Two piers are preferred to three, four or more piers because of the difficulty in aligning more than two. Experience has shown that fusion welded LP gas tanks can be supported safely by two piers placed anywhere between the extremities and the quarter points. More than two piers result in unequal loading with consequently undesirable stresses in the tank. This is an example of *economical* safety.

The height of tanks above ground depends upon the type of installation and ground conditions. When the bottom outlet of a tank is used, it should be high enough to make the shut-off valve readily accessible. When this outlet is connected to the suction side of a pump, the tank should be high enough to provide a good suction head.

Special attention for flood-areas

Storage tanks that are in areas subject to floods should be given special attention to prevent flooding. Pier heights can be increased or tanks can be strapped to piers and the piers and footings made heavy enough to overcome buoyancy of the empty tank and the buoyancy of the submerged concrete and the overburden.

A general and recommended practice includes resilient cushions under piers to allow for minor imperfections in pier surfaces, to protect tanks from corrosion and to act as a lubricant as the tank expands and contracts. Sometimes corrosion plates, consisting of thin steel, are welded to the tanks on the points resting on piers.

Storage tank construction

The design, construction and testing of propane storage tanks are always to be in accordance with the unfired pressure vessel code by American Society of Mechanical Engineers or American Petroleum Institute-American Society of Mechanical Engineers, or in accordance with rules of the authority under which the tanks are installed. However, such rules must conform substantially with

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Jacobs Stresses Need for More Effective Appliance Promotion at PCGA Convention

by Arthur Rohman
Western Editor

ON the eve of the one hundredth anniversary of the birth of the gas industry in California, almost a thousand delegates and their wives, representing 26 gas companies and 101 manufacturers, gathered at the Ambassador Hotel in Los Angeles, September 9-11, to attend the Pacific Coast Gas Association's 59th annual convention. The official registered attendance of 953 broke PCGA's previous record of 876.

Keynote of the convention was established at the first general assembly of the delegates at a luncheon presided over by the Pacific Coast industry's patriarch, Franklin S. Wade, chairman of the board, Southern California Gas Company, and PCGA president in 1923.

President W. M. Jacobs, vice president, Southern California Gas Company, enlarged upon the convention's slogan, "Plan, Promote, Produce" by tracing the development and growth of the industry since the Association's first convention in 1893.

Serious appliance marketing problem

Focussing attention on the problems currently before the industry, Mr. Jacobs stated that "a serious appliance marketing problem confronts us," and that the best answer to this and other major problems facing the industry today lies in emphasizing the fact that PCGA was not formed "as a public utility association but as a *gas* association." Mr. Jacobs urged that efforts be made to continue and even expand the effective promotional programs coordinated and carried out through the Association.

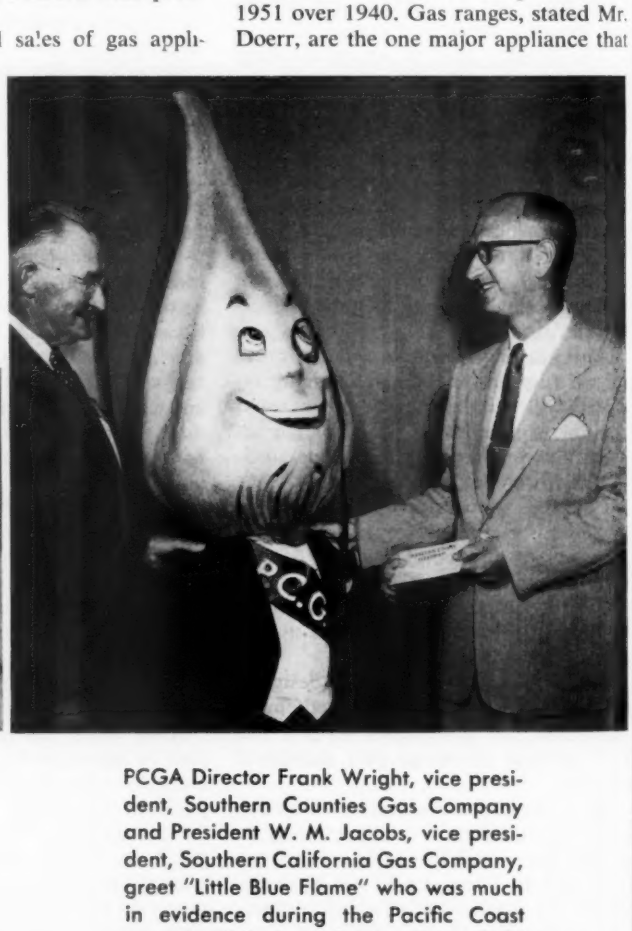
Industry unification was stressed by Houston Natural Gas Corporation's Frank C. Smith, vice president of American Gas Association, and Servel's Louis Ruthenburg, president of Gas Appliance Manufacturers' Association. Mr. Smith stated that PCGA has demonstrated "that a strong regional association working closely with the continental association, is the best approach to the solution of the gas industry's nation-wide problems."

Because national sales of gas appliances and equipment have been abnormally low since 1951, many GAMA members have been confronted with subnormal profits or actual loss, said Mr. Ruthenburg. He outlined the steps being taken to increase cooperation between AGA and GAMA in attacking this problem.

Future of appliances in California

The need for greater understanding and action on the problem of appliance sales was pinpointed in a voluminous report by O. R. Doerr, vice president in charge of sales, Pacific Gas and Electric Company, who, in analyzing the historical trend of saturation of major gas appliances in PG&E territory, noted that space heating has made the greatest advance—an increase of 88 per cent in 1951 over 1940. Gas ranges, stated Mr. Doerr, are the one major appliance that

Leaders of Pacific Coast Gas Association for 1953 are (left to right): Treasurer Harry McGann, auditor, Pacific Gas and Electric Company; President J. S. Moulton, vice president, Pacific Gas and Electric Company; Vice President W. C. Mainwaring, vice president, British Columbia Electric Co., Ltd., Vancouver.



PCGA Director Frank Wright, vice president, Southern Counties Gas Company and President W. M. Jacobs, vice president, Southern California Gas Company, greet "Little Blue Flame" who was much in evidence during the Pacific Coast group's 59th Annual Convention held last month.

evidently "have not been able to increase their acceptance at a rate faster than customers are being connected for domestic natural gas service."

Mr. Doerr stated that California householders would spend $275,000,000 for new gas appliances in the next eight years, that population-wise the Pacific Coast natural gas retail market will increase from 11,100,000 in 1950 to 14,650,000 by 1960, a growth of 32 per cent.

Further emphasis on the sales problems facing our general economy were discussed by John Fistere, director of sales development, *Fortune*, who stated that the most glaring deficiency in the American sales force is at the retail level and outlined means for improving the situation.

Emphasis on diligent effort to assist the dealer by every means possible was stressed by Robert S. Bell, executive vice-president, Packard-Bell Co., and the great potentiality of television as industry's most effective mass sales medium was outlined by Rudick Lawrence, of National Broadcasting Company.

One of the most pressing problems facing the gas industry in general, and the California industry in particular, at the present time is that of gas rates and rate structures. This problem was discussed by Walter J. Herrman, vice president, Southern California Gas Company, who discussed the adequacy of rates from the viewpoints of over-all income, and of specific rates in relation to the value of service, concluding his talk with some suggestions as to rate forms.

A colorful bit of industry self-analysis was injected into the meeting by George S. Coates, manager, customers' department, Southern Counties Gas Company, when he described a number of situations wherein company policy was often at variance with the desires and best interests of the consumer. "When we think a customer is unreasonable," said Mr. Coates, "let's put ourselves in his position and examine our policies and practices and see who is really unreasonable."

The new '49ers Club of PCGA

An innovation at this year's convention was the installation of the thirty-four men named to charter membership in the '49ers Club of PCGA. The purpose of the new organization, said PCGA Managing Director Clifford Johnstone, is to make it possible for the Association to give recognition to its "work-horse" members, who, through the years, have consistently contributed time and effort to Association activities. Membership is based on points earned through service as an officer in the Asso-

(Continued on page 46)

PG&E Uses Bypass Trimmers At New Dispatching Station

FACED with the problem of designing a dispatching station at Milpitas, California, capable of distributing 400 million cubic feet of natural gas per day to central and northern California, engineers of Pacific Gas & Electric Company, San Francisco, devised a unique trimmer valve system which successfully handles the wide variations in the huge quantities which pass through the main supply lines.

Incoming gas from the California gas fields at Kettleman Hills and Rio Vista supplements the main flow from Texas and New Mexico, piped through the 34-inch "Super Inch" pipeline.

Conventional valving of such a supply at Milpitas, the main dispatching terminal of the entire network, appeared to be impractical. Pressure factors and fluctuations in demand ruled out the possibility of single throttling valves on those lines where heaviest demand was expected, suggesting instead the application of trimmer control valves, used in parallel with larger plug valves.

For trimmers, 6-inch Foxboro Stabilflo valves were installed bypassing the main plug valves which range in size from 12″ to 24″. Each of the plug valves is electrically regulated from the main control panel at Milpitas, permitting the station operator, by a switching device, to adjust the valve opening.

The individual flows are measured and controlled by Foxboro Model 40 indicating flow controllers. The instrument, by throttling the trimmer valve, maintains flow to meet variations in consumer demand. However, when variations cause the trimmer valve to exceed a predetermined maximum or minimum opening, lights on the operating panel signal this condition, warning the operator to adjust the opening of the main plug valve accordingly and allow the trimmer valve to return to its mid-range position. Rotax alarms on Foxboro pressure recorders give warning of too-high or too-low pressure conditions, permitting the operator to readjust the flow controller.

The signalling device consists of two explosion-proof microswitches mounted on a vertical plate which is secured to the valve motor support column. Both the high-lift and the low-lift switches are equipped with adjustable angle rollers. A switch trip bracket, clamped to the valve stem, contacts the rollers at the pre-set high and low limits, and a light on the main panel signals this condition for the operator's guidance. Only the station bypass is operated with a single plug valve.

There are seventeen Stabilflo valves, equipped with this unique switching assembly, handling the difficult mainline trimmer assignments at the modern Milpitas dispatching station.

Six-inch Stabilflo trimmer valve, one of seventeen installed in underground concrete pits at Milpitas, Cal., dispatching station. All trimmer valves are equipped with vernier Valvactors which provide accurate positioning and speedier response. Below the diaphragm motor are two explosion-proof microswitches which signal high and low limit lift conditions on the control panel

Photo Foxboro Company

Explosion Liabilities Suggest Precautions for Utilities

by Leo T. Parker

Attorney at Law
Cincinnati, Ohio

EXPLOSIONS, the bugaboo of every gas utility, usually leave behind them for legal settlement the question of who is liable. Experiences of some utilities, in the courts after explosions, indicate the results that may be anticipated, and may suggest precautions to avoid gas company liability.

First, it is important to know that if a gas explosion is caused by clear negligence of a gas company's employee, the gas company *always* is liable.

For example, in Seaford v. Smith, 194 Pac. (2d) 792, it was shown a gas company's employee, named Schott, was sent to repair a leak in a gas appliance that the company had installed in a dwelling. The employee first lit a match and applied it to the escaping gas and immediately blew out the flame which followed. He then opened the valve or removed the plug, and the gas rushed out into the room. Without any intent of causing an explosion and without using good judgement, the employee failed to disconnect a nearby electric refrigerator. When the motor of the refrigerator automatically began running its spark exploded the gas and wrecked the building.

"The reasonable inferences from the evidence in this case indicate quite satisfactorily that Mr. Schott (employee) was not working on the tank as a mere volunteer," the court held. "It appears that he knew, or should have known, of the great danger of releasing the gas in the presence of an electric motor attached to a refrigerator, without first disconnecting it or without switching off the electricity, and that the explosion and fire were the proximate result of that negligence."

Quite obviously if this employee had used good judgement based on actual knowledge of the hazard associated with having gas escape in close proximity to an electrical spark producing motor, he would have saved the gas corporation considerable financial loss.

Degree of care

"Have the courts formulated a clear and understandable rule as to the degree of care a gas company's employees must use to avoid explosions of gas on premises owned by consumers?"

The law generally imposes a duty on a gas company, as follows, "Natural gas is a dangerous agency. Its distribution is accompanied by many possible dangerous consequences, and it is therefore well established that a higher degree of care and vigilance is required in dealing with such agency than is required in the ordinary affairs of life. A degree of care commensurate to the danger involved is required of a distributor and seller of gas to avoid injury and damage and, in case of failure to exercise such care and injury or damage results it is liable."

Another important point of law established by a recent higher court decision is that where a gas company is cognizant of facts which should indicate to it the possibility of accident or explosion of gas, it may be held liable even though the precise manner in which the harm resulted could not have been foreseen. See Sternbock v. Consolidated Gas Utilities Corporation, 138 A. L. R. 880.

While a gas company is not an insurer of the safety of the consumer's premises or the personal property therein, the law does not impose upon the company the arduous duty of inspection in every case, yet when its agent or employee has good cause to believe that an inspection should be made, it may be negligence not to inspect, and if so the company is liable for damages proximately caused by such negligence. See Lynchburg Gas Company v. Sale, 160 Va. 783.

Another important point of law is that testimony always is admissible disclosing the condition of gas appliances and pipes after an explosion to prove whether or not a gas company's employee was negligent in inspecting the premises before turning on the gas.

In the late case of Clay v. Butane Gas Corporation, 39 N. W. (2d) 813, the testimony showed that soon after a gas company's employee installed an appliance in a home an explosion occurred. After the fire in the building was extinguished the assistant fire chief went into the basement and observed a copper pipe that came in from a wall and he heard a hissing sound such as made by escaping gas. He notified the other firemen who were guarding against fire upstairs, placed his hand over the pipe, and gave an order to obtain a cap so it could be put on the pipe. Gas was escaping from the pipe, under pressure.

In view of this testimony, the jury decided that the gas company's employee had negligently left the building without making a careful inspection of the consumer's pipes. The jury held the gas company liable in heavy damages to the property owner. The higher court approved the verdict, and said, "The broad general rule is that where there is no change in the condition of an appliance or the premises or the scene of an accident, evidence as to the condition of such appliance or place, either before or after the event in issue, is relevant and admissible to show its condition at the time of such event, provided it relates directly to the issue in question and is not too remote in point of time."

Appliances owned by property owner

A great deal of discussion has arisen in the past among gas company officials and employees over the question, "If gas pipes and appliances are not owned or controlled by the gas company, what legal duty has employees of the company to inspect and repair gas leaks?"

Modern higher courts consistently hold that a gas company which does not install pipes in a customer's building and which has no control over them, is in no way responsible for the condition in which they are maintained and, consequently, is not liable for injuries caused by a leak therein of which it has *no knowledge*. In other words, the gas company is warranted in assuming that the interior system of pipes in a privately owned building is sufficiently secure to permit the gas to be introduced with safety. However, circumstances may be such as to require an inspection of pipes on private property before turning gas into them.

The question of liability under such circumstances is generally determined by the particular facts of each case and is frequently a question of fact submitted to a jury. If a gas company knows, at the time it turns on gas, or after turning on the gas, becomes aware that there are defects in the pipes, or if the company is in possession of facts that would suggest to a person of ordinary care and prudence that the pipes in the building are leaking or otherwise are unsafe for the transportation of gas, the company is under a duty to make such an inspection or investigation as a person or ordinary care and prudence would make to ascertain the safety of the pipes, before it furnishes or continues to furnish gas through them.

If the gas company fails to do this and furnishes gas through the pipes, it does so at its own risk and becomes liable for an injury resulting therefrom to any person in the building who is without fault. Similarly, a gas company knowing that the service line which it is under no duty to repair or maintain, is rusted or cor-

roded to such an extent as to permit gas to escape, must cause the line to be repaired by the person whose duty it is or must shut off the gas.

Danger unknown

A great deal of discussion and argument has arisen in the past regarding the care that a property owner must use to safeguard workmen and others on his premises against injuries caused by explosion of gas.

For illustration, in Engle v. Reider, 77 Atl. (2d) 621, the testimony showed that a man named Reider is the owner of certain business or commercial property. He had a hot water heater installed on the second floor for the purpose of supplying hot water to the tenants. Its fuel was natural gas; it was enclosed in a small closet and, although it was provided with an opening for that purpose, it was not fitted with a vent to carry off the fumes produced by the heater when burning. The heater was vented by means of a hole cut through the ceiling of the closet into a loft space between the ceiling of the second floor and the roof of the building. At the time the heater was installed, Reider was advised by the contractor who did the work that a fresh air vent ought to be attached to it.

Later, Reider entered into a contract with a man named Routman for the installation of a furnace on the second floor of the building, adjacent to the hot-water heater. Routman sent two employees to install the furnace. Later, one of the employees was found lying dead on the floor of the loft as a result of his having inhaled the carbon monoxide gas produced by the hot water heater.

The dependents of this deceased employee sued Reider for heavy damages. The higher court held Reider liable. The decision said, in part, "A possessor of land is subject to liability for bodily harm caused to business visitors by a natural or artificial condition thereon if, but only if, he (a) knows, or by the exercise of reasonable care could discover, the condition which, if known to him, he should realize as involving an unreasonable risk to them, and (b) has no reason to believe that they will discover the condition or realize the risk involved therein."

Should employ plumber

According to a late higher court decision, a gas company, may, to an extent, avoid liability for gas explosions in private properties by employing plumbing contractors to install gas equipment and appliances.

In the leading case of Miller v. Wichita Company, 33 P. (2d) 130, the higher court held that a gas company is guilty of negligence and liable for subsequent damage, if a leak in a customer's pipes and appliances causes injury to person or property, provided the officials or employees of the company had notice of leaks, and after receiving such notice, an employee negligently inspected or negligently repaired the leaks; or agreed to inspect and repair the leak and then failed to do so; or refused to inspect or repair the leak knowing a dangerous conditions exists, and with this knowledge failed to shut off the gas until the property owner had his pipes and appliances properly inspected and repaired.

Explosion followed three inspections

For comparison, see Booker v. Kansas Power and Light Company, 205 Pac. (2d) 984. The facts of this case are that a violent explosion occurred in a building. The explosion originated in appliances sold and installed by the gas company. Prior thereto the gas company had received three notices concerning unusual circumstances relative to gas fumes in the building and was requested to make an inspection. After each notification the gas corporation sent an employee to the building but he found nothing wrong with the gas appliances. Nevertheless an explosion occurred three weeks after the last inspection was made.

The building owner sued the gas company for damages. The gas corporation's lawyer argued that the corporation could not be held liable for the explosion since the broken pipe was on the building owner's service line which was *not* under control of the gas corporation. Nevertheless the higher court held the gas corporation fully liable, and said:

"If a gas leak had been, or by proper inspection could have been, discovered in the customer's line it would then have been the duty of appellant (gas corporation) to shut off the gas until the customer could have repaired his own lines."

This court held the gas company liable purely because its employee had failed to properly and carefully inspect the property owner's line. Now, while it is not very often practical for gas companies to employ independent plumbing contractors, nevertheless it is advisable to do so under unusual circumstances because the courts hold independent plumbing contractors personally liable for their own negligence and since these contractors do not work under control of the gas companies' officials the companies are relieved from damage caused by the contractors' negligence.

Ignores complaint

Generally speaking, a gas company is rendered liable for damage caused by gas explosions, if the corporation's officials or employees completely ignore a complaint made by a consumer.

For illustration, in Blassingame v. Lone Star Gas Company, 236 S. W. (2d) 526, it was shown that a property owner named Blassingame detected gas escaping from or near the meter in his basement. The pipes and appliances were not owned or controlled by the gas company. The property owner notified the gas company that gas was leaking in his basement but the company failed to send anyone to make an investigation. Soon afterward, an explosion occurred effecting considerable damage. Blassingame sued the gas company for heavy damages. During the trial an employee of the gas company testified that when he installed the meter and regulator at the house he tested them and all connections and service lines to detect leaks and that he found no leaks. Also, the evidence was that at the time of installation the meter was inspected and tested by the company's employees and that it did not leak. It is further in evidence that the gaskets between the connections of the meter and the regulator were of non-fire-resistant materials. Blassingame argued that although the leak originated in his pipes or appliances the gas company was liable because it failed to send employees to inspect the building.

The higher court held the gas company liable, and said, "It is undisputed that the defendant (gas company) after being warned of escaping gas, made no inspection of its service facilities, and had not inspected its meter and connections since installation. In the case here there is evidence of an explosion and that natural gas was escaping and had been escaping either from defendant's (Blassingame's) service facilities or from the facilities installed and owned by appellants (gas company) for some two weeks before the explosion, and that the gas company had received notice of the escaping gas, but made no inspection or test for the escaping gas after receiving such notice."

No inspection after leak complaint

For comparison, see Minnesota Light and Power Company v. Hoover, 102, 229 P. 285. In this case the higher court held a company liable because the testimony showed that although the lines were owned and controlled by the property owner, the company failed to investigate or make an inspection after receiving notification from the property owner that an apparent danger existed. The court said:

"The liability of the company, if any, must be predicated upon its knowledge of the defective condition in case of appliances not owned nor installed nor controlled by it. It is generally held that where the appliances which have caused injury are not owned or controlled by the company, such company is not liable for the damage sustained."

Broader Gas Industry Information Held Essential to Attract Individual Investment

by John F. Falvey

Financial Editor

GAS company and other corporate managements still have a *considerable* job to do in selling the average American on the merits of the free enterprise system.

John F. Falvey

This is shown in the recent Consumer Finance Survey conducted under the auspices of the Board of Governors of the Federal Reserve System.

Despite a one-third gain during the past year, the survey shows that only eight per cent of the country's families with income of more than $3,000 annually prefer common stocks as investments. The majority of these investors cite the high yield obtainable as the chief reason for their choice of stocks as a medium for their funds.

This means that liberal and stable dividends are a major factor in broadening the market for a corporation's shares. But, when it is considered that common stocks increase sharply in favor as family income broadens—with fully nineteen per cent of people with annual income of $7,500 or more favoring common stocks—it is clear that corporate managements have little more than scratched the surface in developing a real market for their companies' shares.

It is a fact that neither investors nor their investment advisers will 'reach' for information about a given company. Some security analysts have so stated publicly. The first and most important step is for management to give out sufficient information about operating returns and prospects to permit the prospective investor to weigh the merits of the individual company's stock against others. *Without this information there is no choice.*

Yet, the number of gas companies loath to give out this minimum volume of information is startling, to say the least. Among all segments of industry the gas industry must be labeled one of the most backward in this important respect.

Recent studies indicate that pension plans, exclusive of Federal programs such as Railroad Retirement, Old Age and Survivors' Insurance, and Federal civil service plans, generate some three billion dollars annually. Of this, approximately ten per cent is estimated to find its way into preferred and common stocks. Pension funds account for a substantial proportion of the institutional money which has been finding its way into equity stocks in increasing amounts within the past few years.

But, if only ten per cent of the $12 billion total of individual savings in the country were to be invested in equities, this would equal at least four years of pension fund investment at the present rate. It might well be that corporate managements are overlooking a sound bet in not directing to the general public more information about their companies and their prospects.

Savings banks constitute an as-yet practically untapped source of funds for equity investment. But money forthcoming from this source is not expected to be large (AMERICAN GAS JOURNAL, April, 1952) since only five per cent of assets, or 50 per cent of surplus and undivided profits, are available under recently enacted law in New York. And the sum available becomes even less if the views expressed by Roger F. Murray, vice-president of Bankers Trust Company at a savings bank conclave on September 23, 1952, are any criterion.

"Truly 'defensive' stocks should not," he said, meaning chiefly public utility shares . . . "constitute more than 30 per cent to 40 per cent of a common stock commitment."

Going a step further, he said, "In approaching common stocks . . . we ought to put away that yield book. Our appraisal has to be of future earning power under varying conditions. Considering the known and unknown contingencies in the outlook, the final decision on purchase or sale must be in terms of what we are willing to pay for that kind of earning power."

Under recent Federal Power Commission dogma, as exemplified in its decision in the Colorado Interstate Gas Company and Northern Natural Gas Company cases—where the Commission reduced the rate of return to 5¾ per cent and 5½ per cent, respectively, to produce net earnings of 8.45 per cent and 8.75 per cent, respectively, on the equities—future earnings power is diffi-

(Continued on page 40)

INDEX OF YIELDS : SELECTED UTILITIES STOCKS

	Sept. 1952	Aug. 1952	July 1952	June 1952	May 1952	Apr. 1952	Mar. 1952	Feb. 1952	Jan. 1952	Dec. 1951	Nov. 1951	Oct. 1951
Natural Gas Transmission Companies	4.44%	4.10%	4.01%	3.98%	4.05%	4.08%	4.03%	4.36%	4.32%	4.50%	4.51%	4.67%
Natural Gas Transmission & Distribution Companies	5.45	5.30	5.26	5.28	5.32	5.34	5.14	5.29	5.17	5.33	5.30	5.36
Manufactured & Mixed Gas Companies	4.80	4.70	4.89	4.84	5.06	5.13	4.99	5.18	5.05	5.25	5.36	5.32
Class "A" Electric Companies	5.39	5.40	5.49	5.60	5.54	5.65	5.51	5.61	5.53	5.80	5.78	5.83
Class "B" Electric Companies	5.42	5.46	5.51	5.55	5.57	5.61	5.48	5.70	5.64	5.76	5.82	5.78

This is a straight arithmetical index of comparative yields obtainable on a selected group of gas and electric utility industry common stocks.

The companies comprising this index have been selected by the AMERICAN GAS JOURNAL as providing a representative cross-section of each industry, from the standpoint of geographical diversification and of the relative importance of the individual companies in their areas.

No effort has been made to weight the average to give effect to changes in capitalization or in dividend rates because the yields afforded on the issues reflect such changes. The index is designed to show the rate of return and not necessarily market movements on the stocks comprising it.

This index is compiled from: natural gas transmission companies, 5; natural gas transmission and distribution companies, 5; manufactured and mixed gas companies, 4; class "A" electric companies, 4; class "B" electric companies, 5.

Safety in Utility LP Gas Plants Depends on Basic Engineering and Sound Construction

(Continued from page 15)

the rules under the ASME code or the API-ASME code.

Propane tanks are stamped ASME U-68—200 psig or U-69—200 psig; ASME U-200—250 psig or U-201—250 psig; or ASME code, 1950 edition, 250 psig.

New tanks should, if possible, be constructed in accordance with the ASME code, 1950 edition, or paragraph U-200 or U-201 of the 1949 edition of the code.

These are the minimum design pressures that should be used with the different codes:

Tank type	200
Vapor pressure at 100°F not to exceed	215 psig
ASME U-68, U-69 1949 edit.	200 psig
ASME U-200, U-201 ASME 1950 edit. API-ASME	250 psig

The 1950 ASME code has been adopted by all states excepting Pennsylvania and Ohio.

Capacities of individual LP gas tanks have been limited to 30,000 standard U.S. gallons.

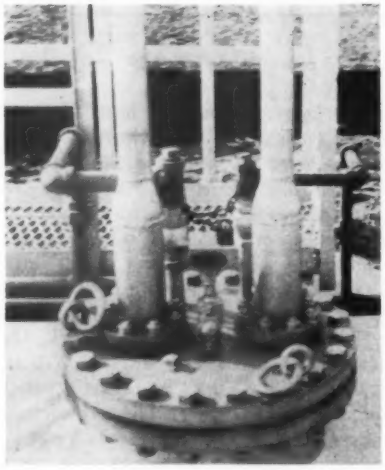
LP storage tank openings have been designed in an accepted standard for a number of years, and there is no evidence to show that the present design needs to be changed.

While there have been requests from a number of sources to eliminate bottom connections in LP gas tanks, there is no evidence to show that this would make safer installations. Bottom outlets are just as safe as top outlets if good engineering practices are followed in the piping that is known to be subject to expansion, contraction, pulsations and tank settlement. The primary necessity for bottom outlets is to provide direct piping to a liquid pump for static head and to eliminate gassing or cavitation. A feature of bottom outlet connections is the prevention of moisture collection in this line and the elimination of scale or foreign matter.

Little need for burying tanks

There is so little need for burying, insulating or water spraying LP gas tanks that detailed description of the methods will be omitted here. Sound engineering practices coupled with the requirements in pamphlets 58 and 59 are still considered entirely adequate to safe construction and operation.

Relief valves installed in LP gas storage tanks protect them against overpressure that is due to an external fire, over-filling the tank or filling the tank with a product having a higher vapor pressure than that for which the tank was designed.



This is an example of a relief riser or stack that should be changed because the flow is reduced considerably as the size of the riser is reduced.

Relief valves that are sized in accordance with the flow capacities given in Appendix A of NFPA pamphlet 58 will prevent the development of excessive pressure. Valves selected from this appendix have been tested by authorized laboratories and their capacities are stamped on the valves.

Pressure setting of relief valves is to be in accordance with the following table, except in states that have not adopted the standards in pamphlet 58.

Tanks	*Per cent of code design pressure*	
	Min.	*Max.*
ASME U-68—U-69	100	125
ASME U-200—U-201	90	100
ASME, 1950 Edition	90	100
API-ASME	90	100

Some relief valves not safe

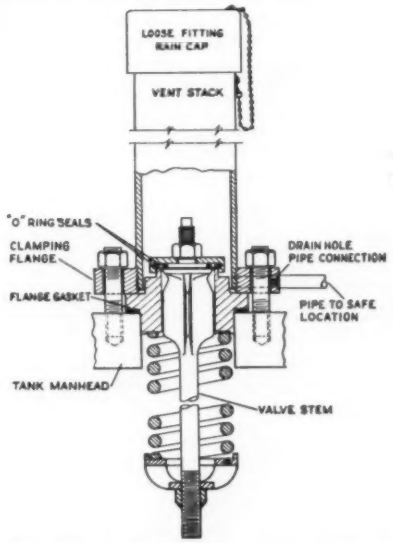
In that connection, certain internal-type relief valves that were installed prior to January 1, 1945, should be replaced immediately, since most of these valves had bronze stems and, like all castings, are subject to failure from shock. Other internal-type relief valves installed between January, 1945, and December, 1949, should be checked to make certain that they have steel stems. Replacements should conform to valves that have the Underwriters' approvals.

Risers from relief valves should be of the same size as the valve outlet connections, and it is essential that any which restrict the flow, due to reduction in size, should be changed.

External-type relief valves are used sometimes, but they are not generally recommended. When this type of valve is used, the manifold should be of steel; cast iron manifolds should be changed.

Most internal-type relief valves have a milled slot in the flange to drain off water and prevent freezing.

Recent tests have shown that this slot passes a large volume of gas when the relief valve blows. If that gas is ignited, it is possible that the flame will impinge on the tank or adjacent tanks. Methods of handling this weep hole problem are being studied and tested now. Results of tests on new designs of internal relief valves will be incorporated after the results have been evaluated.



This properly sized riser or stack is equipped with a loose fitting rain cap.

The risers from safety relief valves, under present regulations, are permitted to be seven feet high. Calculations have shown that there is not enough difference in the effect of radiant heat on the top of a tank from gas burning at the end of seven-foot risers to warrant raising them to ten or fifteen feet. In fact, the added danger, due to the added leverage of a longer pipe on the flange, is enough to rule out riser extensions.

Hydrostatic relief valves are necessary to the safety of an LP gas plant. These valves need only small capacities and are placed in liquid lines. They may be shut by block valves and left full of liquid. A small increase in atmospheric temperature to such a line can cause such a large increase in pressure that relief must be provided to avoid a failure in some part of the piping system.

TO BE CONCLUDED NEXT MONTH

Old Days Recalled... from AMERICAN Gas Journal

90 Years Ago

October, 1862

THE CENSUS RETURNS OF *1860 afford fruitful subjects for contemplation, particularly to those who are at all interested in the development and growing greatness of the country. . . . Figures relating to the manufacture of gas in this (New York) city we are sure underestimate the extent of the business. But assuming them to be correct, they show the prominence of this branch of industry. With a single exception there is more money invested in the manufacture of gas, than any other commodity, the one item of clothing being set down as having a capital of $5,645,800 while the sum invested in the manufacture of gas is estimated at $4,000,000.*

1862

IN THE ISSUES OF THE AMERICAN GAS LIGHT JOURNAL *of July 1st and August 15th, 1862, the editor foreshadows what is every day becoming more apparent, to wit, the necessity for cheapening gas light. As now sold it costs much more than kerosene. That oil gives a fine light, and from the improvements making in the construction of lamps used for it, the trouble of attending them is not great. Petroleum is now an established product of a great oil territory, and for years will flow at the bidding of its owners. Distilleries will be able to produce kerosene cheaper than ever, and its effect upon gas companies must be to diminish, and, in time, destroy their profits, unless to protect themselves they sell their light at lower rates. Can gas companies on the present plans do so?*

1862

THE GALLANT THIRTY-SEVENTH REGIMENT, *commanded by Col. Charles Roome, President of the Manhattan Gas-Light Company have returned from the seat of war, their term of enlistment having expired. They come, however, not to remain, but with the patriotic design of reorganizing for the war.*

1862

THE DIRECTORS OF THE *New York Gas-Light Company at a recent meeting determined that the Government tax should not be added to the bills of consumers, being driven to this conclusion by the spontaneous burst of indignation, which had assumed proportions well calculated to disturb the equanimity of the advocates of the increased price.*

50 Years Ago

October, 1902

THOSE INDEED would be hard to please who gave expression to words of fault finding over the scene of the Thirtieth Annual Meeting of the American Gas Light Association, the technical sessions of which were brought to a close this afternoon—Thursday the 16th inst. That the many who reported at the Plaza Hotel presaged a good attendance was well borne out when at 10 o'clock, October 15th, the President Mr. William R. Beal of New York City formally called the meeting to order. The presidential address was a commonsense well put together document, and its sensible paragraphs will be read with profit and pleasure equal to the satisfaction of those who had the satisfaction of listening to its composer deliver it.

1902

BRIEFLY TOLD: The stokers and other skilled hands employed by the New Haven Gas Light Company have petitioned for an increase in pay from 22½ cents to 25 cents an hour. An answer to their petition was to be given last Saturday.

1902

UP TO SEPTEMBER 15TH the United Gas Improvement Company had placed in Philadelphia 30,547 gas ranges.

1902

THE SEEMING TERMINATION of the coal strike, after its long and wearying dragging out will easily explain the strong advance in securities on the Stock Exchange. The strike and its consequences are not altogether unmixed evils for the gas companies of the country, since the scarcity and high price of solid fuels have taught many householders who tried gas as a substitute lessons in favor of the latter that will hereafter keep them permanent users of the gaseous fuel.

1902

ALL BULLION AT THE San Francisco mint will hereafter be melted by the use of gas instead of coal or coke. The change will tend toward the making of coin at a more economical cost to the Government and will also materially lessen the uncleanliness and dirt heretofore caused by the old and antiquated machinery, which has been in use since the opening of the mint in 1874.

American Gas Fundamentals

OUTLINE

NATURAL GAS
- *Geology
- *Drilling and completion
- Methods of estimating reserves
- Chemicals from gas

MANUFACTURED GASES
- *Coke oven gas; producer gas, blue gas carbureted water gas
- *Reformed gas
- *Hi-Btu oil gas
- Interchangeability

LIQUEFIED PETROLEUM GASES
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BASIC GAS LAWS
- *Perfect gases
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TRANSMISSION
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GAS DISTRIBUTION
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GAS UTILIZATION
- Combustion characteristics
- Domestic
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CONVERSION PRACTICES

MANAGEMENT PROBLEMS AND POLICIES
- *Corporate structure
- *Public utility regulation
- *Public relations
- Theories of rate making
- Rights-of-way

*** Indicates chapters published since January 1, 1951; available without charge to new subscribers to American Gas Journal.**

How to Use the Material

American Gas Fundamentals *is a comprehensive compilation of basic gas facts to guide any gas utility employee toward a broader understanding of the industry as a whole.*

The series is designed to be removed from each current issue of AMERICAN GAS JOURNAL *and filed in a ring binder where it may be accumulated into a text book of permanent usefulness. Material should be filed under the major subject head appearing in the upper right hand box at the head of each chapter.*

Principles of Gas Combustion

IN this age of technological progress and chemical miracles, the most important of all chemical reactions is undoubtedly that of combustion. Primitive man used this reaction to develop his cultural life; our civilization is dependent upon combustion and upon the combustible materials, coal, oil and natural gas, which we call *fuels*.

Our coal, oil and natural gas reserves are our most valuable mineral resources and their proper utilization is a matter of interest to every one of us. While they are increasing in importance as raw materials of the chemical industry, the volumes required for such purposes are insignificant in comparison with the volumes required as fuels.

The overall efficiency of their utilization is dependent upon the efficiency with which they are burned, that is the combustion reaction and the efficiency with which the heat released by this reaction is transferred to the places where it is needed. Very high efficiencies are possible with gas, for gas is the perfect fuel, not only because of its cleanliness and convenience, but because its combustion can be most readily and accurately controlled.

What then is meant by combustion? Combustion may be defined as the rapid combination of a fuel with oxygen that produces heat. In every day language, it is *burning*.

The oxygen required for combustion is obtained from air, which is a mixture of oxygen and nitrogen, one part of oxygen to roughly four parts of nitrogen. The nitrogen plays no part in the reaction; it is inert and absorbs part of the heat produced.

The active constituents of all fuels are carbon, hydrogen, and compounds of carbon and hydrogen called hydrocarbons. Some fuels also contain small amounts of sulphur, which burns, but it is an objectionable constituent, not found in commercial natural gas, and need not be considered here.

Combustion Reactions

Three essential reactions of combustion are:

1. Carbon *plus* oxygen = carbon dioxide *plus* heat. The chemical equation is $C + O_2 = CO_2 +$ heat. This means that one atom of carbon combines with two atoms of oxygen to produce one molecule of carbon dioxide and heat.

2. Hydrogen *plus* oxygen = water vapor *plus* heat ($2H_2 + O_2 = 2H_2O +$ heat). Thus, four atoms of hydrogen will combine with two atoms of oxygen to produce two molecules of water vapor and heat. But, as the formula indicates, it also means that two cubic feet of hydrogen will combine with one cubic foot of oxygen to produce two cubic feet of water vapor.

3. Methane *plus* oxygen = carbon dioxide *plus* water vapor *plus* heat. ($CH_4 + 2O_2 = CO_2 + 2H_2O +$ heat). Here, one cubic foot of methane plus two cubic feet of oxygen equals one cubic foot of carbon dioxide plus two cubic feet of water vapor plus heat.

The combustion reactions for ethane, propane and also for the hydrocarbons that make up bituminous coal and oil are similar but more complex. These reactions all produce carbon dioxide, water vapor and heat.

Perfect combustion, as indicated in the foregoing equations, produces just two products, carbon dioxide and water vapor. These products, mixed with the inert nitrogen that is released by the air required for combustion, are called the products of combustion.

It will be noted that the complete combustion of one cubic foot of methane requires two cubic feet of oxygen. To obtain two cubic feet of oxygen it is necessary to supply 9.57 cubic feet of air. This air required for the perfect combustion of one cubic foot of methane (CH_4) thus supplies 7.57 cubic feet of inert nitrogen which mixes with one cubic feet of carbon dioxide and two cubic feet of water vapor to form the products of combustion. The flue gases or stack gases that escape to the atmosphere when CH_4 is burned consist largely of nitrogen. This is true not only for the fuel gases but also for coal and oil. In short, when air supplies the oxygen required for combustion, the products of combustion, sometimes called smoke and stack gases, consist mainly of nitrogen, regardless of the fuel burned.

Perfect combustion is defined as the complete oxidation of a fuel with exactly the theoretical amount of oxygen required. When excess air is supplied, there is excess oxygen present, which plays no part in the combustion reaction, although, due to its presence, the flame temperature of the fuel is reduced. The excess oxygen produces what is known as an *oxidizing atmosphere*, which sometimes is desirable. In most types of furnace heating, however, this type of atmosphere results in a waste of fuel and scaling of the work.

Complete combustion is the complete oxidation of a fuel with either the theoretical amount of oxygen required or an excess of oxygen.

If a fuel is burned with a deficiency of oxygen, there is incomplete combustion and less heat is produced. This type of combustion provides what is known as a *reducing atmosphere*, which is desirable for certain types of industrial work. Ordinarily, oxygen deficiency means the production of carbon monoxide and a waste of unconsumed fuel.

For most heating operations, domestic, commercial and industrial, perfect combustion is the ideal, regardless of the fuel used. This is difficult to obtain in ordinary household and commercial equipment, and such appliances, to be on the safe side, are usually adjusted to burn with a slight excess of oxygen.

The amounts of heat produced as a result of fuel combustion depends upon the calorific value of the fuel and the amount of fuel burned.

Most fuels vary considerably in calorific value. Coal varies from 11,000 to 14,000 Btu per pound, oil from

130,000 to 150,000 Btu per gallon, while commercial gases vary from 125 Btu producer gas to 3,200 Btu butane gas. Manufactured gas, used in utility service, generally has a calorific value of approximately 525 Btu per cubic foot; natural gas for such service is generally between 1,000 and 1,050 Btu per cubic foot.

The comparative value of natural gas and manufactured gas as fuels is of prime importance to gas men at this time. Natural gas has largely replaced manufactured gas in utility service and practically complete replacement can be expected, if there is sufficient natural gas and transmission pipeline capacity. The main advantage of natural gas over manufactured gas is its lower cost per heat unit. A secondary but important advantage to a gas utility is its higher calorific value, by virtue of which the thermal capacity of a company's distribution system is greatly increased, sometimes doubled. Because of these advantages, natural gas can be served to the ultimate customers at less cost than manufactured gas, and the competitive position of gas in the overall fuel business is strengthened.

Natural gas has been called the perfect fuel, and properly so, but manufactured gas is also the perfect fuel. To the ultimate consumer, therefore, the advantage that natural gas offers over manufactured gas is not in its inherent superiority, but in the fact that it is generally delivered at less cost per heat unit.

The highest quality of gas service can be rendered with either manufactured gas or natural gas, as has been demonstrated in many cities of our country. When a manufactured gas company changes to natural gas service, the new gas, after all appliances have been properly adjusted, should perform as efficiently and satisfactorily as the old, *but no better*. This is an important point that should be recognized by all gas men, for insofar as performance is concerned, natural gas and manufactured gas are alike.

Combustion Characteristics

While the combustion *characteristics* of manufactured gas and natural gas are different, the proper combustion of the one gas is as readily controlled as that of the other gas with no advantage to either in combustion efficiency.

A common mistake made regarding natural gas is to consider it hotter than manufactured gas. For all practical purposes there is no difference in the hotness of these gases. Under scientific measurements, some manufactured gases are hotter than natural gas, but the difference is too small to be of practical importance.

The fact that natural gas has a higher calorific value than manufactured gas means that it is a more *concentrated* fuel. A cubic foot of 1,050 Btu natural gas contains as many heat units as two cubic feet of 525 Btu gas. Therefore one cubic foot of such natural gas will do as much work, produce as much heat, as two cubic feet of such manufactured gas. The flame temperatures of these two burning gases will be practically the same, for this temperature is not dependent upon the calorific value of the fuel itself but rather upon the calorific value of the air-gas mixture that is required for perfect combustion.

Just as cubical space is no indication of a building's dimensions, so the calorific value of a fuel is no indication of its flame temperature.

A general understanding of the basic principles of combustion makes it clear why the various gases used in utility gas service have approximately the same flame temperatures or *hotness*, regardless of their calorific value.

To start with let us study the combustion of pure hydrogen gas. Hydrogen, which has a calorific value of 325 Btu, is a hotter gas than either 525 Btu manufactured gas or 1,050 Btu natural gas.

By referring to the hydrogen combustion equation, you will find that two cubic feet of hydrogen combine with one cubic foot of oxygen to produce two cubic feet of water vapor and heat under perfect combustion conditions. Thus, each cubic foot of hydrogen requires one-half cubic foot of oxygen. To obtain one-half cubic foot of oxygen it is necessary to supply 2.39 cubic feet of air. The hydrogen-air mixture that burns, therefore, consists of one cubic foot of hydrogen and 2.39 cubic feet of air. In the 3.39 cubic feet of air-gas mixture, there are 325 Btu supplied by the hydrogen, and the air-gas mixture required for perfect combustion has a calorific value of $\frac{325}{3.39}$ or 96.9.

In other words, the hydrogen-air mixture that burns contains approximately 97 Btu per cubic foot.

Now, let us examine a typical manufactured gas and a typical natural gas to see what their burning air-gas mixtures are like. The following analyses are representative of these two gases.

ANALYSIS OF TYPICAL FUEL GASES

Gas constituent	Manufactured gas *(Per cent)*	Natural gas *(Per cent)*
Carbon dioxide	2.0	0.8
Illuminants	3.4	0.0
Oxygen	0.5	0.0
Carbon monoxide	6.0	0.0
Hydrogen	49.6	0.0
Methane	29.4	91.0
Ethane	0.0	3.1
Propane	0.0	1.7
Butane	0.0	0.7
Nitrogen	9.1	2.7
Btu/cu. ft.	540.0	1044.0

The combustible constituents of manufactured gas are the illuminants, carbon monoxide, hydrogen and methane; in natural gas they are methane, ethane, propane and butane.

AIR REQUIRED FOR PERFECT COMBUSTION

Combustible constituent	Cu. ft. of air required per cu. ft. of combustible
Illuminants	15.0
Carbon monoxide	2.38
Hydrogen	2.38
Methane	9.53
Ethane	16.68
Propane	23.80
Butane	31.00

The air requirements for perfect combustion in the case of manufactured gas can be calculated on the basis of the air requirements of its several combustible constituents.

AIR REQUIRED FOR PERFECT COMBUSTION

Manufactured Gas

Combustible	Cu. ft. of air required per 100 cu. ft.
Illuminants	3.4 × 15.00 = 51.00
Carbon monoxide	6.0 × 2.38 = 14.28
Hydrogen	49.6 × 2.38 = 118.05
Methane	29.4 × 9.53 = 280.18
Total air	463.51
Heat in gas	100 × 540 = 54,000 Btu

Thus we find that, under perfect combustion conditions, 100 cubic feet of this manufactured gas requires 463.51 cubic feet of air and that the air-gas mixture totals 563.51 cubic feet for 54,000 Btu. The calorific value of this burning mixture is therefore $\frac{54,000}{563.51}$ or 96 Btu per cubic foot. It will be noted that this value is just slightly under that of the hydrogen-air mixture.

Now, let us calculate the air requirements of our natural gas.

AIR REQUIRED FOR PERFECT COMBUSTION

Natural Gas

Combustible	Cu. ft. of air required per 100 cu. ft.
Methane	91 × 9.53 = 867.23
Ethane	3.1 × 16.68 = 51.71
Propane	1.7 × 23.8 = 40.46
Butane	0.7 × 31.0 = 21.70
Total air	981.10
Heat in gas	100 × 1044 = 104,400 Btu

For the perfect combustion of 100 cubic feet of this gas, 981.1 cubic feet of air are required. The air-gas mixture totals 1081.1 cubic feet and contains 104,400 Btu. Hence, the calorific value of the mixture which burns is $\frac{104,400}{1081.1}$ or 96.5 Btu per cubic foot.

The fact that the heating values of the air-gas mixtures required by the combustion reactions is practically the same for these two representative gases is an indication that their maximum flame temperatures are similar; one gas is as hot as the other.

It should be understood that the maximum flame temperature of a gas is not dependent solely upon the calorific value of its air-gas mixture.

In order to calculate the *theoretical flame temperature* of a gas, it is necessary to know not only the *heat of combustion* of the fuel gas but also the amount of *sensible heat* in the gas and air, the total quantity of *combustion products* and the *mean specific heats* of these products. Furthermore, the *net heating values* of fuels must be used in these calculations, rather than the better-known *gross values* as used herein.

The scientific formula for this calculation is:

$$\text{theoretical flame temperature} = \frac{\text{heat of combustion plus sensible heat in gas and air}}{\text{total quantity of combustion products times their mean specific heats}}$$

In the above formula the term sensible heat means the heat contained in the gas and air by virtue of their temperatures prior to combustion. When the gas and air are both taken at atmospheric temperature, the amount of sensible heat which they bring to the combustion reaction is relatively small and is practically the same for manufactured gas and natural gas. In our comparison of these two gases, therefore, this factor may be disregarded.

Flame Temperature

The theoretical flame temperature formula, although calling for rather involved calculations, is relatively simple in principle. In everyday language it means that the flame temperature is found by dividing the quantity of heat produced by the amount of heat required to raise the temperature of the products of combustion 1° F.

The unit of heat measurement which we call the Btu (British thermal unit) represents the amount of heat required to raise the temperature of one pound of water 1° F. Hence, 100 Btu can raise the temperature of one pound of water 100° F or it can raise the temperature of 100 pounds of water 1° F. The rise in water temperature is found by dividing 100 Btu by the number of Btu required to raise the water temperature 1° F.

So it is with flame temperature. If the heat of combustion is 100 Btu and the amount of heat required to raise the temperature of the resulting combustion products 1° F is .0278 Btu, the theoretical flame temperature is $\frac{100}{.0278}$ or 3,600° F. If more heat is required to raise the temperature of the products of combustion 1° F, the flame temperature obviously will be lower.

In order to determine the amount of heat necessary to raise the temperature of the products of combustion 1° F, it is necessary to know the specific heats of the three constituents which make up these products: carbon dioxide, water vapor and nitrogen.

The term *specific heat* means the amount of heat required to raise the temperature of one pound of material 1° F. For example, the specific heat of nitrogen is the amount of heat required to raise the temperature of one pound of nitrogen 1° F.

Because gas measurements are usually made volumetrically, a special term, *specific heat per cubic foot,* has been established and is defined as the amount of heat required to raise the temperature of one cubic foot of gas 1° F. Since the specific heat of gases varies with the temperature, it is necessary to use mean specific heats in flame temperature calculations.

The *mean specific heat* has to be expressed as an equation. For example, the mean specific heat of carbon dioxide is $0.02414 + 0.000003589\ t - 0.000000000227\ t^2$ (t-temperature rise). As the result of vast research and experimentation, the mean specific heats of gases have been determined with a high degree of accuracy.

The quantity of combustion products produced is therefore an essential factor in any comparison of the flame temperatures of different gases. This quantity can readily

be calculated in much the same manner as used herein to calculate the air requirements of manufactured gas and natural gas.

When this is done, it is found that the manufactured gas, under perfect combustion, will produce 536 cubic feet of combustion products per 100 cubic feet of gas burned, while a like volume of natural gas will produce 1,088 cubic feet of products of combustion. 100 cubic feet of manufactured gas supply 54,000 Btu to heat 536 cubic feet of combustion products or 101 Btu per cubic feet of products of combustion. 100 cubic feet of natural gas supply 104,400 Btu to heat 1,088 cubic feet of combustion products or 96 Btu per cubic feet of products of combustion.

In the above analysis, the manufactured gas appears to be slightly better than natural gas, but when this comparison is made on a *net Btu basis,* as it should be, the advantage is negligible.

Expressed in net Btu, manufactured gas supplies 89 Btu per cubic foot of combustion products and natural gas 87 Btu. An understanding of the terms *gross heating value* and *net heating value* is necessary in a study of flame temperature.

It is the universal practice to rate the calorific value of fuels in terms of gross Btu. When we speak of 525 Btu manufactured gas and 1,000 Btu natural gas, we are expressing the *gross heating values* of those gases. Every fuel, however, has a *net heating value,* which in the case of manufactured gas is from 50 to 60 Btu less than its gross heating value and in the case of natural gas is from 90 to 100 Btu lower.

Heating Values of Fuel

The *gross heating value* of a fuel is the total number of Btu produced by its complete combustion when the products of combustion are cooled to the temperature of the atmosphere and the water vapor in the products of combustion is condensed to a liquid. Thus, this heating value includes the heat released when water vapor at 212° F changes to a liquid at 212° F. This amount of heat, called the *heat of vaporization or condensation,* is, of course, not available to raise the temperature of the products of combustion. In actual practice, it is seldom recovered since the temperature of the products of combustion as they leave a chimney or stack is generally much higher than 212° F. Hence the water vapor produced by combustion, is lost to the atmosphere as water vapor.

The *net heating value* of a fuel is the number of Btu which would be available from complete combustion per unit of fuel, without the *heat of vaporization or condensation* of the water vapor. It is, therefore, the amount of heat available to raise the temperature of the combustion products. The net Btu values of the two gases being compared are 479 for manufactured gas and 950 for natural gas. Using these values, the manufactured gas supplies 89 Btu per cubic foot of combustion products and the natural gas, 87 Btu.

According to the flame temperature formula, the flame temperature of manufactured gas is found by dividing 89 Btu by the specific heat of one cubic foot of the products of combustion. With natural gas it would be found by dividing 87 Btu by the specific heat of one cubic foot of its combustion products.

Since the two gases are so similar in the amounts of heat which their combustion makes available per cubic foot of combustion products, and since the specific heat of their respective combustion products are almost identical per cubic foot, it follows that their respective flame temperatures are quite similar.

The following table lists the theoretical flame temperature of some of the most common gases and it should not be surprising to find that carbureted water gas, coke oven gas and natural gas are quite similar, with respect to their flame temperatures or hotness.

THEORETICAL FLAME TEMPERATURES

Gas Burned with Air

Gas	°F
Hydrogen	3,887
Methane	3,484
Ethane	3,540
Propane	3,573
*Producer gas	3,010
*Coke oven gas	3,610
*Carbureted water gas	3,650
*Natural gas	3,562

* These gases vary somewhat in their chemical composition and therefore may have flame temperatures slightly higher or lower than those shown in this table.

The maximum flame temperature that can be produced with any gas is slightly less than its theoretical maximum which is based on the assumption that all the heat of combustion is instantly available for heating the products of combustion. In actual practice, there are always some heat losses due to flame radiation and possible disassociation of the products of combustion at high temperatures.

Mathematical calculations of flame temperatures are especially important because of the great difficulty encountered in actually measuring high flame temperatures. The standard instruments such as thermometers and pyrometers, used in measuring the temperatures of solids and liquids, are not applicable to accurate flame temperature measurement. For this work special measurement methods have had to be devised and the accepted methods are so complicated and costly to perform that their use is limited almost entirely to scientific investigations.

This chapter on Principles of Gas Combustion was prepared by Charles R. Bellamy, Technical Editor, American Gas Journal

Are the Public Utilities Racing Hell Bent for the Poor House

Or Haven't They Ever Had It So Good?

IMPOSSIBLE though it may seem, the utility companies are headed in diametrically opposite directions—at one and the same time.

They are headed along the rosy road of financial solvency, thanks to us and our policies, says a representative of one of the regulatory commissions.

"Receivership or government ownership is waiting for them at the next bend in the river," under present tax levels and depreciation accounting methods employed by the commissions and by the Bureau of Internal Revenue, says counsel for one of the larger utilities.

Speaking are Charles W. Smith, chief of staff, Federal Power Commission, George Jackson Eder, assistant general attorney, International Telephone and Telegraph Corporation, and Clarence H. Ross, of counsel, Peoples Gas Light & Coke Company, Chicago, addressing the public utility section of the American Bar Association, San Francisco, September 16.

The theme is depreciation: its function, its adequacy during time of inflation, and the responsibility of utility management toward this important item.

Utility earnings misrepresented

Present accounting methods, prescribed by public service commissions, the Bureau of Internal Revenue and the courts, misrepresent utility earnings to the extent of perhaps a half billion dollars a year, Mr. Eder stated, and, even if costs go no higher than they are today, the investment in public utility stocks has already been confiscated to the extent of over four billion dollars. If the case cited for the electric utilities were to constitute a norm, the correction of this deficiency for the utilities in general would wipe out completely the present corporate surplus and about a sixth of the par value of the common stock.

As against this dim view of the situation, Mr. Smith pointed out that depreciation reserves of the electric utilities amounted to $4.7 billion—20 per cent of plant—at the 1951 year-end, compared with $1.9 billion, or 13 per cent of plant, at the end of 1940. This occurred despite the 60 per cent increase made to plant during the interim.

"I am sure all of you know," he said, "the important part played by improved depreciation practices in financing these large plant additions," as he defended the almost universally followed practice of figuring straight-line depreciation on original cost of property.

Fair value depreciation advocated

Advocating the use of the fair value method of calculating depreciation accruals, and describing the problem of inflation merely as one of currency depreciation and approachable from the viewpoint, Mr. Eder recommended monthly accruals to a currency depreciation reserve. The reserve would be kept entirely separate from the depreciation reserve and retained solely for plant retirements and replacements, with accruals representing the difference between cost of property being retired and the present fair value of replacement.

Effect of court decisions

But while admitting that the theory of computing depreciation on present fair value as held by the United States Supreme Court "was demolished by Justice Brandeis' dissent . . . discarded by Justice Hughes . . . and expressly over-ruled by Justice Douglas [in the Hope Natural Gas case], so that it would be a waste of time at this late date to challenge the standard accounting practice of depreciation based on cost," Mr. Eder goes past the actual decisions to what he describes as the "ratio decidendi" of the Brandeis and Hughes opinions.

In so doing he goes so far as to state that ". . . we have a complete expression *of the law of the land on public utility depreciation,* as enunciated by Hughes, Brandeis and Stone and *confirmed by the* Hope and later decisions, namely, that a utility company is entitled to accumulate the funds (in the form of the depreciation reserves) sufficient to replace its plant at the end of its service life, and that the only reason cost is used as the basis of depreciation accruals is because that method has worked fairly well in the past and because original cost is known and ultimate replacement cost is not."

As proof, Mr. Eder pointed to the Brandeis statement in the case of United Railways vs West that the *primary purpose* of the depreciation charge is to "preserve the integrity of the investment" and that "a utility company is entitled to accumulate funds sufficient to replace its plant at the end of its service life. . . ."

The views as completely expressed by Justice Brandeis were that depreciation accounting is introduced "to serve three purposes. It preserves the integrity of the investment. . . . It serves to distribute equitably throughout the several years of service life . . . the known cost less the estimated salvage value. And it enables those interested . . . to ascertain, as nearly as possible, the actual financial results of the year's operations.

"The most that a continuing business like a street railway may expect is that, at the end of the service life, it shall be reimbursed with the then-value of the original investment or with funds sufficient to replace the plant. . . . (However), there is no basis for assuming that either the value of the original investment or the replacement cost will, at the end of the service life, equal or approximate the present value. . . ."

(Underlining is by the writer. Note that Justice Brandeis says *"The most"* that a utility can expect. . . . He did not infer that *the least* it could expect was that property could be replaced from the depreciation reserve.)

While Justice Hughes in the Minnesota rate cases Brooks-Scanlon Corp. vs U. S. (in which he was joined by Justice Brandeis) pointed out that, "The property is held in private ownership and it is that property, and not the original cost of it, of which the owner may not be deprived without due process of law," both justices upheld the accounting practice of basing depreciation on cost, and Justice Brandeis in the Hope case said, ". . . the only expense of plant retirement which is capable of reasonable ascertainment (is) the known cost less the estimated salvage value."

Currency depreciation rejected

Establishment of a 'currency depreciation reserve' to cure the alleged deficiency in the depreciation reserves because of using original cost as the norm, as recommended by Mr. Eder, was tried, as he states, by Southern Bell Telephone and Telegraph Company in four southern states which it serves but the proposal was rejected by the regulatory commissions in the respective states on the ground that it was not sanctioned by good accounting principles, by the Federal Communications Commission nor by the Bureau of Internal Revenue; as well as on the additional ground that the company and not the rate payers should provide the capital requirements of the business, and that present subscribers should not be asked to pay for replacements for the benefit of future subscribers.

Mr. Ross goes a step farther and lays the blame for the deficiency in depreciation accruals and reserves squarely at the doorstep of the utility company managements. "By and large," he said, "it does not seem to me that utility management is discharging its full obligation in this regard. I believe this failure is due partly to a lack of recognition of the problem.

"None of us knows," he added, "whether the purchasing power of the dollar in the future will be 25 cents, 50 cents or some other amount in terms of the 1935-39 Consumers' Price Index dollar. In my opinion the present need for adjusting depreciation allowances does *not* depend on a forecast of rising price levels in the future. (Underlining is his.)

"Some believe it possible that the purchasing power of the dollar may be restored to its 1939 level or even higher. Even under this cycle, however, there is nevertheless a present need for adjusting depreciation allowances."

Drawing a parallel between the investor of 1940 and of the present, he points out that the 1940 investor is not now being pro-

tected under original cost depreciation for the impaired purchasing power of the sound dollar which he invested at that time. "The only way that the 1940 investor can be protected," he said, "is under the highly improbable assumptions (1) that in the future the purchasing power of the dollar will increase sufficiently over the remaining life of the property to make up for the under-accrual of depreciation from 1940 to date, and (2) that regulatory authorities will not reduce the rate of depreciation in recognition of the fact that the purchasing power of the dollar received in times of depression may be twice as great as the purchasing power of the dollar invested in depreciable property.

Future consumers won't pay depreciation

". . . . While future consumers, assuming a stabilized dollar, will return the investment of the future investors, the past investor is left high and dry. Until we do have a stabilized currency the future consumers will not even pay for the depreciation of the property purchased by the future investors."

The issue is not one of using either reproduction cost or fair value in determining the adequacy of depreciation. Reproduction cost "would only be practicable," he stated, "if all utility property were now being, and would continue to be, replaced by similar property. By and large this is not the case in the utility industry.

"The issue is really whether the depreciation base shall be cost in a stated *quantum* of dollars without modification because of the *quality* thereof, or whether it shall be cost in a stated *quantum* of dollars with recognition of the *quality* thereof. In other words, I think the question is . . . what is the *original cost* in terms of current dollars of the property consumed, *not* what is the cost in terms of the current dollars of replacing the property." (underlining his)

The question of book value

Mr. Ross seems to have weakened his argument somewhat by adding that: "It is entirely possible that the continuance of inflation at the rate suffered during the past several years will not create a serious financial problem for utility corporations. There is no evidence to date that the failure to recover full economic depreciation under such circumstances will impair materially the financial credit of public utilities or their ability to raise equity capital by the sale of additional stock at book value.* When and to the extent it does, regulatory commissions will probably meet the issue by providing a rate of return high enough to attract capital.

> * Merely obtaining book value is not enough, as two speakers mentioned recently at a luncheon meeting of analysts dedicated to the question of rate of return required to attract investors to utility shares.
>
> Both Professor James C. Bonbright, public utility economist, and James A. Lyles, vice-president, First Boston Corp., at a recent forum stated that if utilities were to obtain new equity capital on a favorable basis during times of good business, such as the present, new common stock money must be raised at an appreciable premium over book value.—Ed.

"I think every one will agree that the purchasing power of the dollar cannot be restored except as a result of a severe and long continued depression. To stick to unadjusted original cost depreciation in such a period would result in large profits from depreciation accruals by a great many companies. It would mean that a substantial part of the several billions of 54-cent dollars invested in utilities in recent years would be returned twofold as a result of the customers paying more for original cost depreciation in 100-cent dollars. I do not believe there is any reasonable possibility that public utility regulatory authorities will adhere to original cost depreciation in a period of severe and prolonged depression. It is not desirable, even if possible, that utility customers during a depression should be required to make up for depreciation deficiencies incurred during times of inflation. This theory runs counter to all regulatory concepts."

Commissions stay with original cost

In discussions with people closely aligned with state commissions, the writer was advised that since the majority of commissions now adhere to the original cost principle they have a moral obligation to stay with it in good times and bad, and in fact might have a difficult time endeavoring to swing away from this concept when the business and/or currency trend swings, even in the unlikely event they were disposed to do so.

As Mr. Ross indicates, and as numerous utility executives say, it would be a very difficult process for the average utility company to prove hardship, especially in view of the optimistic attitude of investors toward utility common shares and of the tremendous volume of new common stock which the industry was able to bring to market this year on favorable terms to the companies.

Maintaining that the principle of original cost depreciation has been soundly conceived, and taking issue with anything which would deviate from that norm, Mr. C. W. Smith, of the Federal Power Commission, said he knew of only two or three utility companies which seriously support the argument that depreciation should not be based on cost but should be based on the value of utility property.

"After studying the question seriously and long," he stated, "I am convinced the fair value method should not be employed.

"The fair value argument is rooted in the proposition that the function of depreciation accounting is to finance replacements. Its function is not to finance replacements. The function of depreciation accounting is to record an actual cost of operation. Plant is purchased in advance of use and when use occurs the cost of the plant becomes a cost of service, like labor and fuel. If the plant is never replaced that does not excuse the recording of depreciation. If a loss is sustained, in which event depreciation accounting does not aid in financing replacements, depreciation goes on just the same and must be recognized.

"Plant, in a sense, is a deferred charge to operations. Suppose instead of buying plant, a utility rented it under a long-term lease. What would be the cost of the annual rent? Obviously the dollar amount paid.

"There is no substantial difference between acquiring the use of plant under a long-term lease and buying it outright. In both cases the cost is definite and fixed. In both cases different amounts may have to be paid in the future for the use of new equipment replacing the old. This fact, however, does not change what has already been paid in the one case or agreed to be paid under the lease in the order.

"Any item of expense may increase in the future—labor, fuel, supplies. That is no reason why costs presently incurred should be inflated because they may be higher in the future. This, in my opinion, is just as true of plant as of anything else. When the cost is incurred it should be recognized and not before.

"Fair value depreciation is based upon the premise that the cost of replacement will be different from the original cost and that sufficient cash to finance the replacement must be derived from the use of the old item.

"The estimated cost of replacement at the time of replacement is the core of the fair value depreciation argument.

"It makes little difference how high the price of gas pipe lines and generators go to a utility not in the market at the time to purchase them. When we start to predict the cost of replacement of utility property far into the future, we can see how speculative, conjectual and controversial the results will be.

"Another basic assumption of the fair value theory is that price levels will not materially recede. I have yet to meet anyone who would argue for fair value depreciation in a period of declining prices.

"If fair value depreciation is right it must not merely be permissive but must be required. If it is to be required in times of high prices, it must also be required in times of low prices. With our corporation laws being what they are and with the indenture provisions being what they are, fair value depreciation in times of a decline in prices could cause serious maladjustments. These maladjustments could be so disturbing that I am sure no utility would think of sponsoring value depreciation if it thought prices would not remain high.

"Speaking of equity . . ."

"A serious error in the value depreciation process results in a double charge against consumers. Consumers are charged with the cost of operating the old equipment—old generating stations, old steam locomotives, and old cable—while, at the same time, they are required to pay the assumed depreciation cost on the new, better and more efficient equipment which is not yet rendering service. In other words, they are paying $225,000,000 a year fuel cost which they would not incur if new equipment now available were in operation.

"Speaking of equity, this hardly seems to be fair." —J. F. F

News of the Gas Industry

AGA MEMBERS APPROVE CONSTITUTION REVISIONS

An overwhelming majority of its members has approved revisions of the constitution and by-laws of American Gas Association. The new constitution and by-laws, which remove ambiguous and outmoded requirements, will become effective two weeks after the adjournment of the AGA convention.

Changes include the repeal of separate by-laws, with the essential provisions of the former by-laws becoming part of the new constitution and by-laws. Objects of AGA have been reduced from nine to seven, and membership classes have been redefined.

Among the principal provisions of the revised AGA constitution and by-laws is the elimination of the manufactured gas and natural gas department. The development of natural gas transmission has minimized the need for separate departments. AGA says it will continue to sponsor activities of a specific interest to both manufactured gas or natural gas companies. The manufacturers section also is eliminated, since it has existed in name only since Gas Appliance Manufacturers Association was formed.

A new section, known as the general management section, is established to deal with matters of a management nature other than accounting, operating and sales promotional matters. Responsibility for a number of committees will be delegated by the board of directors to a section chairman and vice-chairman of the new section.

Four principal and existing committees are provided for: the general nominating committee, which will have nine members instead of six; the finance committee; laboratories managing committee; and the promotion, advertising and research (PAR) committee. The publicity and advertising committee is eliminated as a general committee, and will be designated as a special committee or a committee under the general management section.

The president, with the consent of the board of directors, still may appoint other general or special committees.

The executive board will comprise 35 elected members including the elected officers and the past president. The board of directors can invite chairmen to attend its meetings, so that the board may continue to have the advice of sections and committees charged with handling finances and funds of the Association. Election and termination of memberships become the function of the Board of Directors. Rates of membership dues and special assessments now will be fixed by a concurring vote of a majority of the board of directors.

The advisory council, no longer limited to past members of the executive board, will consist of 40 members appointed by the board of directors.

The new constitution and by-laws are the result of two and one-half years work by a committee headed by Eskil I. Bjork, president, The Peoples Gas Light & Coke Company, Chicago.

Ruthenburg Receives Two Awards

Freedoms Foundation presented two special awards to Louis Ruthenburg, chairman of the board, Servel, Inc., late last month, for "more than 30 years of loyal and devoted service to the American way of life."

The awards, presented by Edward Hutton, chairman of the trustees of the

Foundation, were based on recommendations of a special committee headed by Dr. Harold C. Case, president of Boston University.

Mr. Ruthenburg, who also is president of Gas Appliance Manufacturers Association, was cited for his address before the University of Indiana Workshop, entitled "The Birthright of Freedom," a talk based on a series of articles he wrote for the Servel employee publication.

In addition to this award, he was presented with an award for Servel, recognizing the "program of public relations at work" carried on by the company in 1949, as a community relations program in Evansville, Ind., location of Servel. A series of advertisements in local newspapers, at that time, gave the public "an enlighted view of the operations of the company in relation to community welfare."

The citations mentioned Mr. Ruthenburg's "dedicated service to Servel employees and their families, to acquaint them with the basic facts governing American enterprise and to instill in them a deep fidelity to our free dynamic institutions guaranteed by constitutional Americanism."

Freedoms Foundation, a non-partisan organization, is located at Valley Forge, Pa., and has made similar awards to other leaders in American industry, during the past five years.

Small Companies Group at Work

Competitive practices, advertising, public relations and promotion are being reviewed initially by a subcommittee of the committee on special problems of smaller gas companies, recently appointed by the American Gas Association.

Discussion by the subcommittee, at its first meeting, brought out the suggestion that to promote normal gas business a minimum of $2.00 per customer should be spent. It was further indicated that substantial increases in this expenditure should be made when companies introduce natural gas.

Also discussed were topics including PAR membership; modernization of small gas company quarters; aggressive gas appliance merchandising; business financing; harmful competitive practices, and gas main extention practices of member companies, including use of bottled gas in fringe territories.

Members of the six-man subcommittee, headed by John A. Weiser, executive vice-president, The Newport Gas Light Co., Newport, R. I., include, Hansell Hillyer, president and general manager, South Atlantic Gas Co., Savannah; J. H. Isherwood, vice-president and general manager, North Penn Gas Co., Port Allegany, Pa.; E. F. Putnam, president, The Greenwich Gas Co., Greenwich, Conn.; A. H. Stack, president, The Tampa Gas Co., Tampa, Fla.; and Thomas H. Sykes, executive vice-president, Suffolk Gas Corp., Suffolk, Va.

Exposition Contest is Announced

Prizes totaling $650 in U. S. Defence Bonds will be awarded to fifteen gas utility employees who submit winning papers on what they see and learn at the exposition of Gas Appliance Manufacturers Association, to be held in conjunction with the American Gas Association convention in Atlantic City.

A contest committee of gas industry publication representatives will judge the entries based on the degree of coverage of a category of equipment display, the inclusion of new developments displayed, and indications of newly-gained knowledge, of value to contestant and his company.

GAMA will present U. S. Defence Bonds, $200 for first prize, $100 for second, $50 for third, and twelve fourth prizes of $25.

Papers should be sent, on or before midnight, December 15, 1952, to Exposition Contest Manager, American Gas Association, 420 Lexington Avenue, New York 17, N. Y. Each entry must be certified to show the contestant is a gas company employee. All papers will become AGA property.

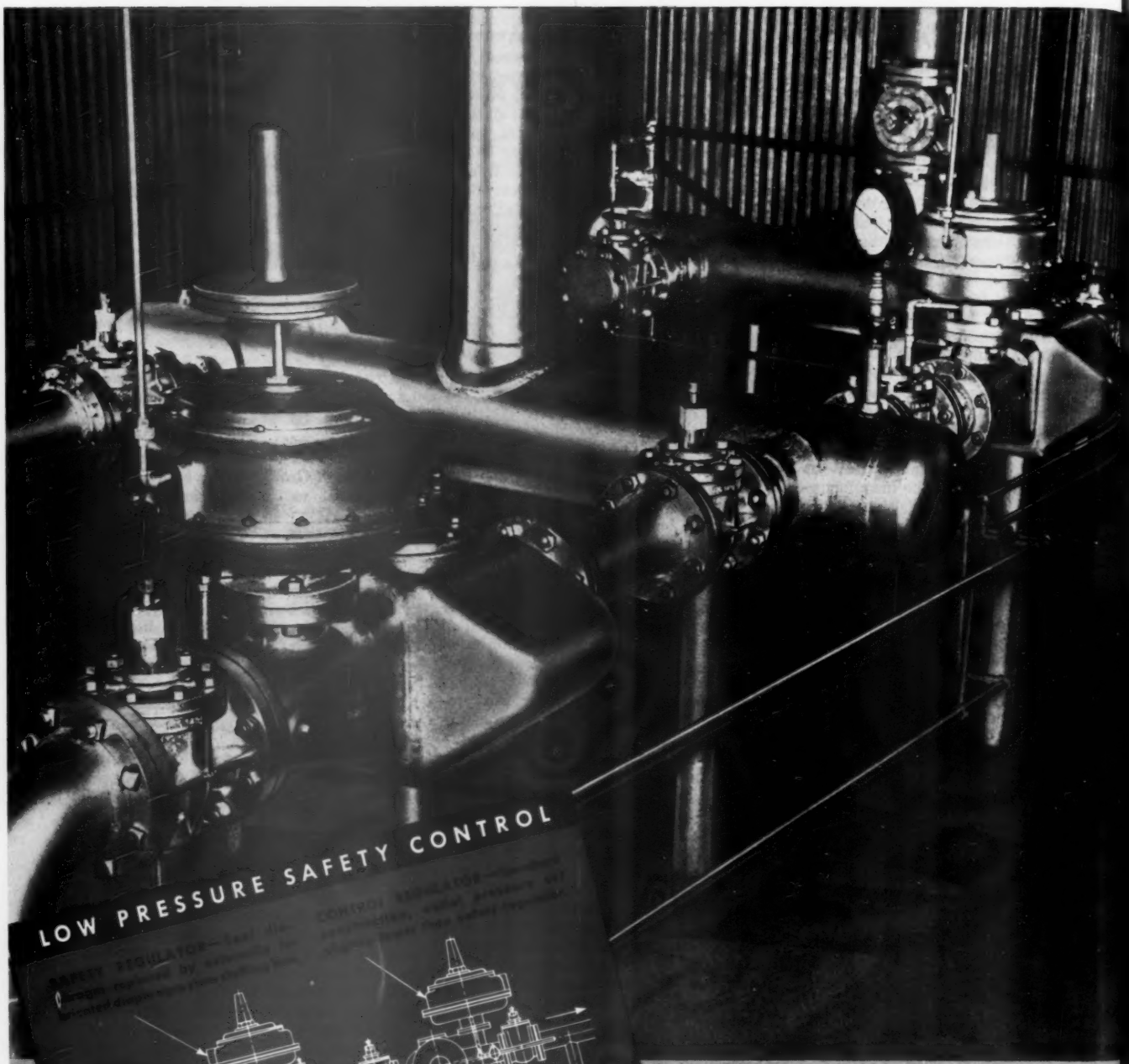
Pipeline Safety Code is Approved

A safety code, covering material, design, fabrication, installation, testing and operation, for gas pipelines has been approved by American Standards Association. This code is the new section 8 of the American Standard, Code for Pressure Piping, B31. 1-1951. The section, designated as B31.1c-1952, is a consolidation of the existing Code for Pressure Piping pertaining to gas piping. It was prepared and published separately as a guide in pipeline construction. The separate publication eliminates the necessity for cross-referencing to other sections of the code.

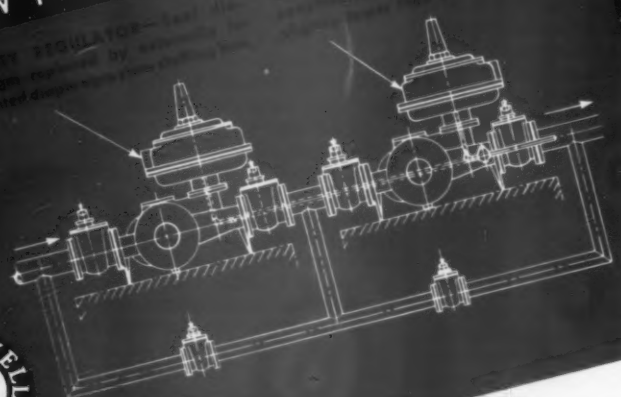
Chairman of the subcommittee which consolidated the new section is Frederic A. Hough, vice president, Southern Counties Gas Company, Los Angeles. The subcommittee is makup of 52 representatives of gas transmission and distribution companies, pipe manufacturers, valve and fitting companies, independent research groups, technical universities, consulting engineers and government agencies.

(Continued on page 34)

In Simplicity...



LOW PRESSURE SAFETY CONTROL



MONITOR CONTROL of Rockwell 014 Low Pressure regulators connected to a common control point downstream for both so that in the event of one regulator failing the other will maintain safe service.

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You Can RELY ON ROCKWELL

BALANCED VALVE

there is Safety!

ROCKWELL Regulators and NORDSTROM VALVES

MAINTAIN POSITIVE CONTROL WITH FEWEST WORKING PARTS

Safety minded distribution engineers have come to recognize that the simplest design will usually offer the best protection for their lines. In this conclusion they are turning to simple, positive operating Rockwell regulators and Nordstrom valves.

On low pressure distribution lines it is becoming accepted practice to install a second Rockwell 014 regulator ahead of existing regulator stations with a common control point downstream from both. This safety regulator eliminates the need for gadgets such as oil seals and vents that get around one hazard by creating another. The second regulator is standard in all parts except for the inclusion of a stuffing box to replace the seal diaphragm.

On high pressure lines many are using Rockwell 015 *back pressure* regulators as a safety measure to relieve excess pressure in the event of diaphragm failure in the line regulator. And to insure the maintenance of safe, close control they are specifying standard Rockwell 015 and 014 regulators in combination for dual reduction.

For many years safety conscious gas men have preferred Nordstrom valves. They appreciate the quick quarter turn operation Nordstroms provide in an emergency—their lubricant sealed positive shut-off—their simple, foolproof design.

Today the trend is towards well designed equipment—simple equipment that improves housekeeping and is easy to maintain. Such is the equipment Rockwell makes for the gas industry. Your inquiries are invited.

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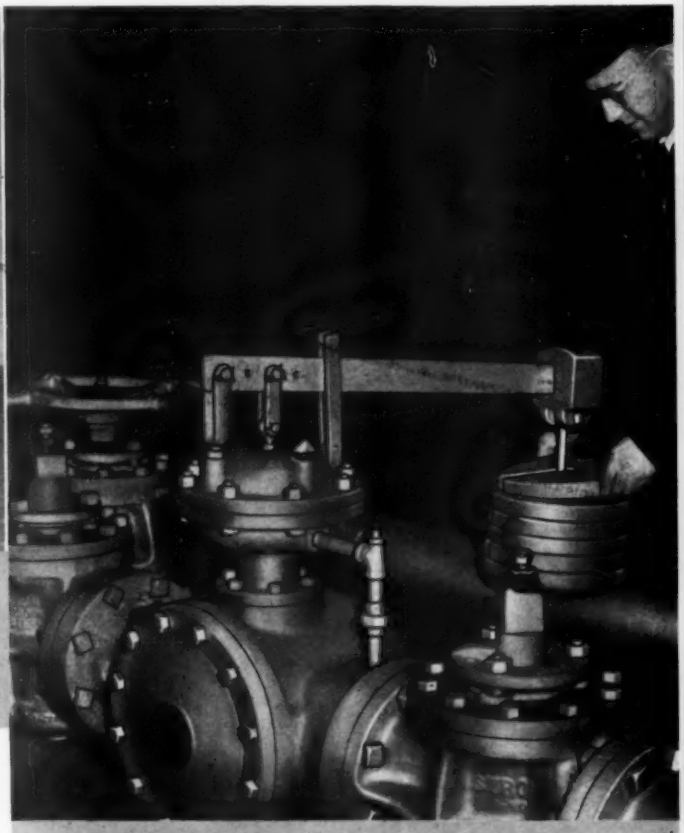
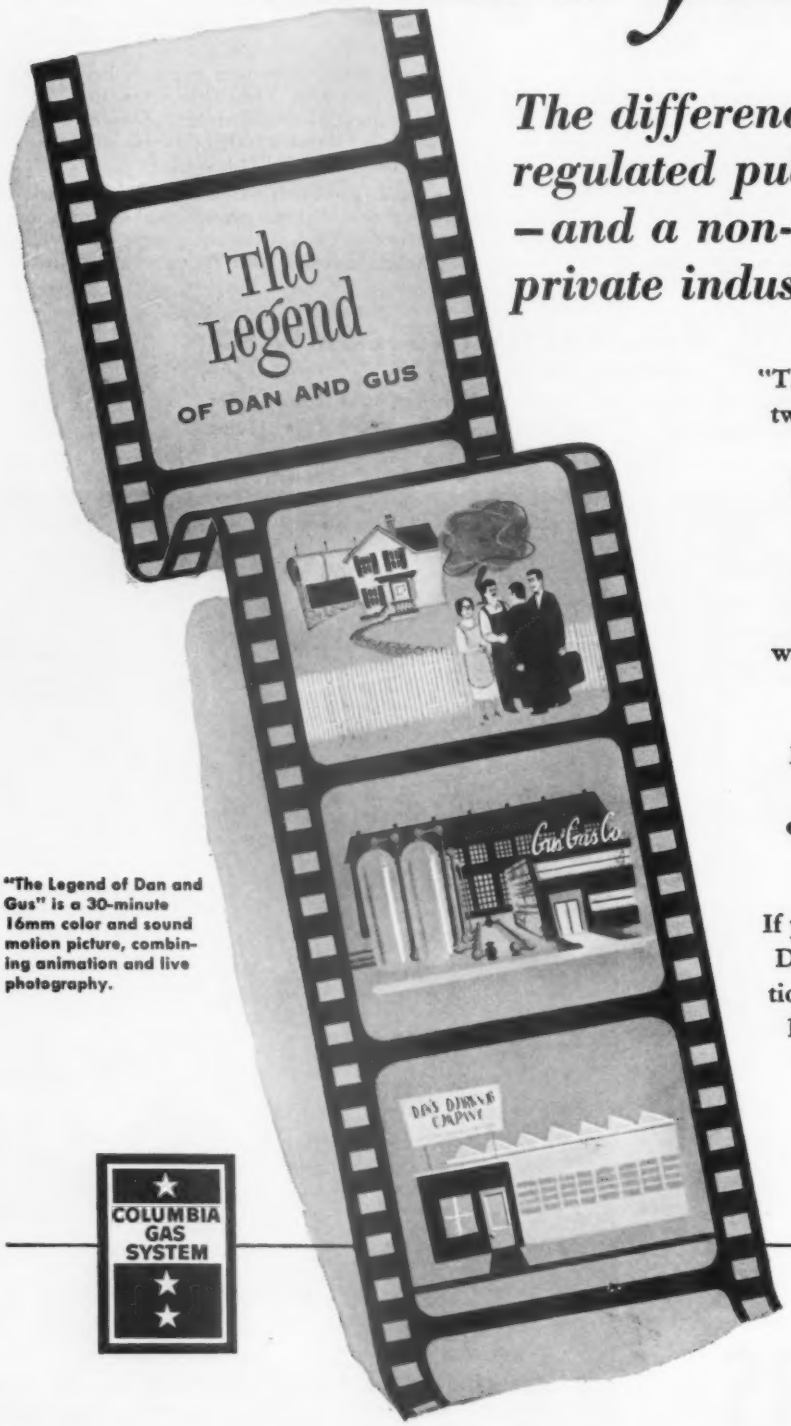
TWO STAGE REDUCTION Simple, positive acting standard Rockwell 015 and 014 regulators provide the safest, most trouble-free way to cut high line pressures to closely controlled utilization pressures.



BACK PRESSURE SAFETY CONTROL Rockwell 015 regulator installed as a back pressure control to relieve excess pressure in the event of line regulator failure.

REGULATORS

Now! *a film that shows you...*



The differences between a regulated public service company—and a non-regulated private industry.

"The Legend of Dan and Gus" introduces two young brothers to the U. S. business scene, together with the firms they founded—*Dan's Doorknob Company* and *Gus' Gas Company.*

In their own way, Dan and Gus are an American success story. They learn to weather economic cycles, material shortages, competition, expansion crises, and a host of other challenges. They learn first hand that regulated and non-regulated businesses are different, and each has its own problems that must be met in different ways.

If you would like to view "The Legend of Dan and Gus" or desire further information about it, write on your letterhead to: Director of Information, The Columbia Gas System, Inc., 120 East 41st Street, New York 17, N. Y.

"The Legend of Dan and Gus" is a 30-minute 16mm color and sound motion picture, combining animation and live photography.

COLUMBIA GAS SYSTEM

COLUMBIA GAS SYSTEM

Do special problems throw your staff off balance?

Special problems are sure to arise in your business, demanding extra effort from your key executives. Added to their regular duties, this puts an undue strain on them—perhaps even lowers their efficiency. Yet, adding personnel to your permanent payroll can throw your staff off balance when the job is completed.

A good way to handle these special problems—with dispatch, economy and efficiency—is to call in *outside* specialists. For almost fifty years, companies have called on EBASCO's engineers, constructors and business consultants to help with such problems. For them, EBASCO has made business studies, prepared financial programs, set up systems for production control and cost accounting, and performed many other valuable services. In design and construction, EBASCO has planned and built over a billion dollars worth of new plants all over the world.

Services like these can mean more efficient operation of your firm . . . can relieve you and your other top executives of a myriad of details that might otherwise prove burdensome. In the long run, the savings you effect by calling in EBASCO far outweigh the reasonable cost.

"The Inside Story of Outside Help," shows in detail how EBASCO can help you. Write for your copy today. Address: Ebasco Services Incorporated, Dept. S, Two Rector Street, New York 6, N. Y.

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NEWS OF THE GAS INDUSTRY

(Continued from page 29)

"The Legend of Dan and Gus"

"The Legend of Dan and Gus" was introduced to a group of leading industrial and financial executives by Stuart . Crocker, chairman, The Columbia Gas System, Inc., to depict the problems with which government-regulated industry is faced.

The Legend is a half-hour animated cartoon that follows the careers of two brothers and the firms they founded: Dan's Doorknob Company and Gus' Gas Company. The film covers the problems of economic cycles, material shortages, competition, financing and other problems that affect the regulated gas company and the non-regulated doorknob company.

The use of animated technique to dramatize complex economic concepts is a pioneering effort to explain the rights and responsibilities of a public utility to public audiences ranging from high school students to graduate economists.

Distribution and showing o fthe film will be concentrated in the seven-state area that is served by Columbia Gas System. However, Mr. Crocker announced, it will be made available to utilities throughout the country for showings of the fundamental problems that are common to most public service companies.

AGA Receives Safety Award

National Safety Council has awarded American Gas Association a certificate of commendation and a citation for meritorious activity in home safety education during 1951-1952.

The award and citation recognized the work AGA has done through distribution and promotion of its safe installation standard for gas appliances among architects, builders, utility companies, enforcement agencies and home owners. The citation also praised AGA for its plan of laboratory testing-and-approval for domestic gas appliances, and for articles on safety.

40% RISE IN GAS SALES BY 1955, PAD GUESSES

Sales of gas by gas utilities during the next five years are expected to climb 40 per cent over the current level according to an estimate made public by Howard B. Noyes, assistant deputy petroleum administrator, Petroleum Administration for Defense.

The 1955 sales volume, according to the PAD survey on which the estimate was based, would reach 69,800 million therms. PAD's estimate of the 1951 sales was 49,700 million therms.

A summary of the actual and estimated sales, in millions of therms, by gas utilities, all types of gas combined, includes:

1948	33,885
1949	35,790
1950	42,090
1951*	49,746
1952*	56,596
1953*	62,199
1954*	66,179
1955*	69,798

* Estimated

The PAD summary also included analysis of the anticipated volume of gas sales by utility classification:

	MMMcf		
	1951	*1952*	*1955*
Residential	1,433	1,597	2,126
Industrial	2,643	3,117	3,747
Commercial and other	427	467	599
Total	4,503	5,181	6,472

There is a strong indication of "things to come" in the PAD forecast of the increasing number of residential customers, especially in view of the increasing strength of the relationship of space heating customers to total customers.

A summary of PAD's residential customer forecast is:

Year (end)	Customers: Residential total (000)	Customers: Space heating (000)	Space heating as % of total residential
1948	20,914	6,726	32.2
1949	21,706	7,739	35.7
1950	22,579	9,642	42.7
1951	23,412	10,700	45.7
1952	24,343	11,850	48.7
1953	25,150	12,958	51.5
1954	25,940	14,127	54.5
1955	26,658	15,241	57.2

Construction Activities Ahead of 1951

Expenditures for new construction in September totaled $3,112 million, about the same as in August, according to preliminary estimates of U. S. Bureau of Labor Statistics and U. S. Department of Commerce. Dollar outlays exceed the 3-billion mark for the third consecutive time in 1952 during September, to round out the largest quarterly volume on record, $9.3 billion, in contrast to $8.7 billion in 1951.

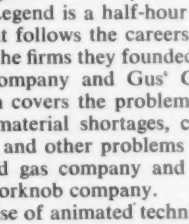
In most major construction categories, activity during September continued at high levels, which is usual for this time of year.

NO. 4 OF A SERIES

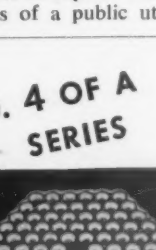
see how DURADIANT HEATING for batch cooking provides

UNIFORMITY in heating
RESPONSIVENESS TO CONTROLS
FLEXIBILITY
SPEED in heating
QUALITY CONTROL
SAFETY
MEANS OF COOLING
LONG LIFE
CLEANLINESS

These are the features most wanted by companies who heat varnishes, resins, oils, inks and chemicals in batch quantities. Get details in Selas Bulletin SC-1015



THE CLUSTER
The basic design presents considerable flexibility in arranging burner pattern for specific requirements.



THE DURADIANT BURNER
To provide rapid heat transfer, it is designed to burn gas-air mixture so that a high proportion of the total heat produced is in the form of radiant energy.

SELAS CORPORATION OF AMERICA
PHILADELPHIA 34, PENNSYLVANIA

Private expenditures totaled $2,037 million, and public $1,075 million.

Comparing the record volume for July-September 1952 with that for the same months of 1951, private residential building and public utilities construction were higher, and private nonresidential building was lower. Private new construction activity as a whole was up three per cent. All major types of new public construction, except public housing, also showed an increase over the year; the entire public sector was thirteen per cent greater.

For the first 9 months combined, private expenditures this year, at $16.1 billion, were slightly under last year's total. In contrast, public construction, totaling $8.1 billion, was up 20 per cent, largely as a result of increased Federal spending for military, atomic energy and defense plant facilities.

Gas Sales Rise in August

Sales of gas to ultimate customers in August totaled 3,316 million therms, a gain of 3.2 per cent over 3,213 million therms sold in August 1951, American Gas Association reports. The Association's index of total gas utility sales for August, 1952, was 323.5 per cent of the 1935-1939 average.

During the twelve months ended August 31, 1952, utility sales of gas rose to 50,101 million therms, an increase of 8.0 per cent over 46,382 million therms sold in the comparable period a year earlier.

Natural gas sales for the month of August aggregated 3,152 million therms, a gain of 4.4 per cent over 3,018 million therms sold in August, 1951. The AGA August index of natural gas sales was 354.5 per cent of the 1935-1939 average. For the twelve months ended August 31, 1952, sales of natural gas totaled 46,746 million therms, a gain of 8.8 per cent over 1951.

Combined sales of manufactured and mixed gases during August totaled 164.2 million therms, a decline of 15.6 per cent compared with sales of 194.5 million therms during August, 1951. The index of manufactured and mixed gas sales for August, 1952, was 120.7 per cent of the 1935-1939 average. For the twelve months ended August 31, utility sales of manufactured and mixed gas were 3,355 million therms, a loss of 2.1 per cent from 3,426 million therms sold in the previous twelve-month period.

Conversions to natural gas in upper New York, the New York metropolitan area and in New England, are responsible for declines in manufactured and mixed gas.

Portland Co Wins Report Award

Portand Gas & Coke Company has been judged as having the best annual report of the gas industry, according to the final ratings of the independent board of judges in the *Financial World* survey of annual reports. The bronze trophy will be presented to Charles H. Gueffroy, president of the company, at the annual awards banquet, Hotel Statler, New York, October 28.

A total of 5,000 annual reports were considered this year in the international competition and these were judged in one hundred industrial classifications. In the gas category, Consolidated Natural Gas Company, New York, was runner-up for top honors, while National Fuel Gas Company, New York, placed third.

Phillips Builds LP Storage Cavern

Miners, working in three shifts, are expected to complete by next March a 400,000-barrel underground storage cavern for LP gas, near Kankakee, Ill., under construction by the Phillips Pipe Line Co., subsidiary of Phillips Petroleum Co. The new facility will be used to store fuel for winter distribution.

Phillips is building other similar installations, but the Illinois project will be the largest. It is being dug in shale from a 294-foot vertical shaft between the 200- and 300-foot levels. When completed, gas will be fed into the cave by pipeline from the company's plant at Borger, Tex., for subsequent use in the Great Lakes area.

Oven Fundamentals in Lab Study

An extensive study of design fundamentals which may contribute to improved oven cookery and promote cooler kitchens is underway at American Gas Association Testing Laboratories.

Sponsored by the AGA committee on domestic gas research, the study includes design factors affecting secondary air supply to oven burners, location and size of flue outlet, heat distribution and burner location, together with finding possible means to reduce heat losses and heat applied.

A preliminary report, No. 1182, was published in February and showed the quantities of radiated and convected heat absorbed by layers of cake in typical contemporary ovens.

Mississippi Valley Adds Gas Properties

The sale of Mississippi Gas Company's gas properties to the Mississippi Valley Gas Company became final September 15. Sold for about $3,300,000, the gas properties, consisting of services to twenty-five towns in central and eastern Mississippi, add 25,000 customers to the company's system, making a total of over 100,000 customers now being served by Mississippi Valley Gas Company.

Mississippi Valley Gas Company is a

MERKIN MODERNIZED
with SELAS SYSTEM..
QUALITY UP
..COSTS DOWN
"Our primary concern . . . a more uniform product of better quality, has been fully realized. Information available indicates a worthwhile saving not only over the previous method, but also over original estimates for gas firing". Thus the plant manager sums up the results of oil and resin cooking on Selas Duradiant settings.
Industrial gas engineers who make recommendations for batch cooking equipment, unhesitatingly recommend Selas Duradiant settings. Send today for Bulletin SC-1015.
SELAS
SELAS CORPORATION OF AMERICA
PHILADELPHIA 34, PENNSYLVANIA

new gas utility, formed in November, 1951. Last March it acquired Mississippi Power & Light Company's natural gas properties, in 52 towns, cities and communities in Mississippi. Now, with the acquisition of Mississippi Gas Company's properties, the new company has become the major gas utility in the state.

2 Gas Turbines Operating at OG&ECo

After three years and 23,000 hours operation of a General Electric natural gas turbine without service repairs, Oklahoma Gas and Electric Company has placed a second 4,000 kw gas turbine unit in service at its Belle Isle generating station.

D. S. Kennedy, president and general manager of the company said that installation of the original gas turbine unit three years ago was the first commercial use of a gas turbine for electric power generation in the United States.

Although the first unit has a rated capacity of 3500 kilowatts, the average load for the three-year period has been over 4400 kilowatts, or more than 120 per cent of its rating.

General Controls Opens New Plant

General Controls Company opened a new plant last month at Skokie, Illinois, ten miles north of Chicago.

The opening of the plant was highlighted by a luncheon attended by the mayors of Chicago, Skokie and surrounding towns, civic officials and executives of business firms in the Chicago area.

The opening ceremony was presided over by General Controls president, William A. Ray; vice president, sales, J. F. Ray; vice president, production, Alvin W. Ray; and sales manager, Fred E. Weldon.

Built at a cost of approximately $750,000, the new plant with 60,000 square feet of floor space, is located on a five-acre lot.

Canadian Company Formed by Eclipse

A new company, Eclipse Fuel Engineering Co., of Canada, Ltd. has been formed to handle sales and service of Eclipse products in Canada, according to executives of Eclipse Fuel Engineering Co., of Rockford, Ill.

The entire Eclipse line of industrial heating equipment will be represented by the Canadian organization.

Offices, established at 705 Bloor Street West, Toronto, will be managed by Gordon E. Bouvier.

Mid-Georgia Company Appoints GM

H. Jack Turner has resigned as city manager, Buford, Georgia, to become general manager of Mid-Georgia Natural Gas Company, Conyers, Georgia.

Mr. Turner's experience with the City of Buford included the supervision of the city's administrative affairs and the managership of three utility services, natural gas, electricity and water.

He became City Manager in 1947 and during the past five years directed an extensive development program for the city.

Mid-Georgia Natural Gas Company is a new gas distribution utility, formed this year, with installed distribution systems in Conyers and Milstead and plans to expand into several nearby cities.

"Yes, Any Time is a Good Time" to make a HEATH LEAKAGE CONTROL SURVEY

Milt Heath advises . . .

"Sign up NOW for a FALL and WINTER GAS LEAK LOCATION SURVEY"

Act *now* to obtain the reduced rates which apply to Fall and Winter type surveys. Heath Consultants, with their experience, know-how and special equipment, make complete and accurate leak location surveys in downtown areas and places where little or no vegetation exists. Heath locates leaks, classifies them as to size and importance, and furnishes detailed reports so that you reduce leakage and hazard to a minimum.

HEATH reports are highly rated by your legal and claims departments and by your insurance company. HEATH is the only nationally recognized leak location agency. Approximately 500 gas properties in some 40 states and in five provinces of Canada use Heath Leakage Control Surveys . . . and Heath clients renew their contracts year after year.

You too can save thousands of dollars annually, reduce hazards, and maintain a maximum SAFETY FACTOR. Decide *today* to have a Heath Leakage Control Survey on your property!

HEATH LEAKAGE CONTROL SURVEYS

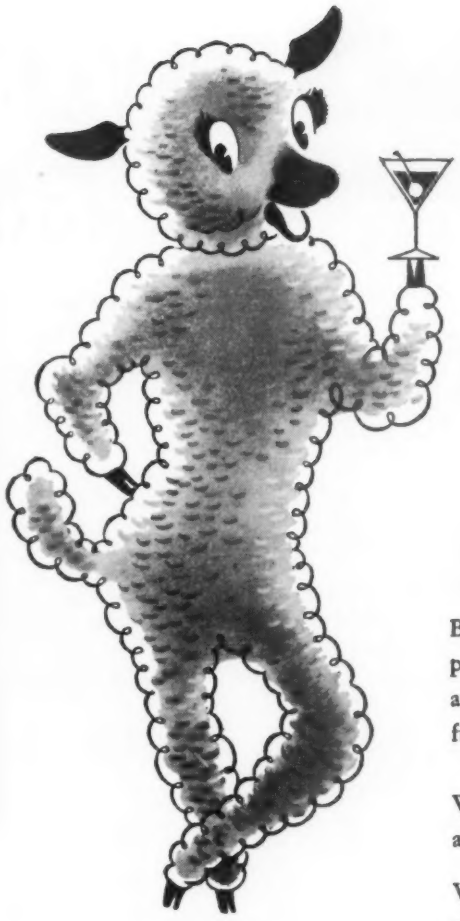
You can't sell gas that leaked out!

Write, Wire, or Phone for Complete Information

HEATH SURVEY CONSULTANTS, INC.

572 Washington Street, Wellesley 81, Massachusetts

Midwestern Office—Richmond, Michigan



VULCAN

diaphragms

don't drink!

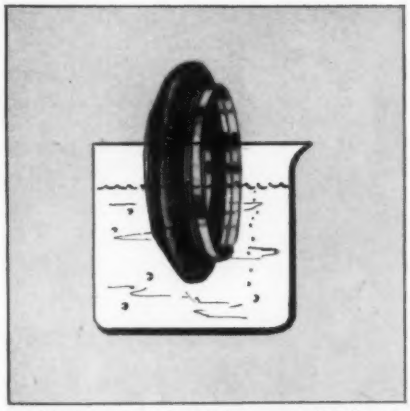
Because VULCAN Diaphragms are extremely dense and non-porous, they are impermeable to moisture. Drip oil, gum formers and condensates cannot pass through them. And there is no diffusion of gas through the fabric.

Whether used in meters, regulators or controls, there is no leakage and no odor.

VULCAN Diaphragms in regulators insure uniform and sensitive pressure regulation because of their inherently low hysteresis effect.

VULCAN Diaphragms, whether flat or molded shapes, are dimensionally stable and will not shrink or stretch. They will not dry out and become brittle. The extreme flexibility of VULCAN meter diaphragms is an important contribution to meter accuracy.

These are just a few of the reasons why VULCAN Diaphragms are preferred by manufacturers of meters and controls, as well as leading utility companies.



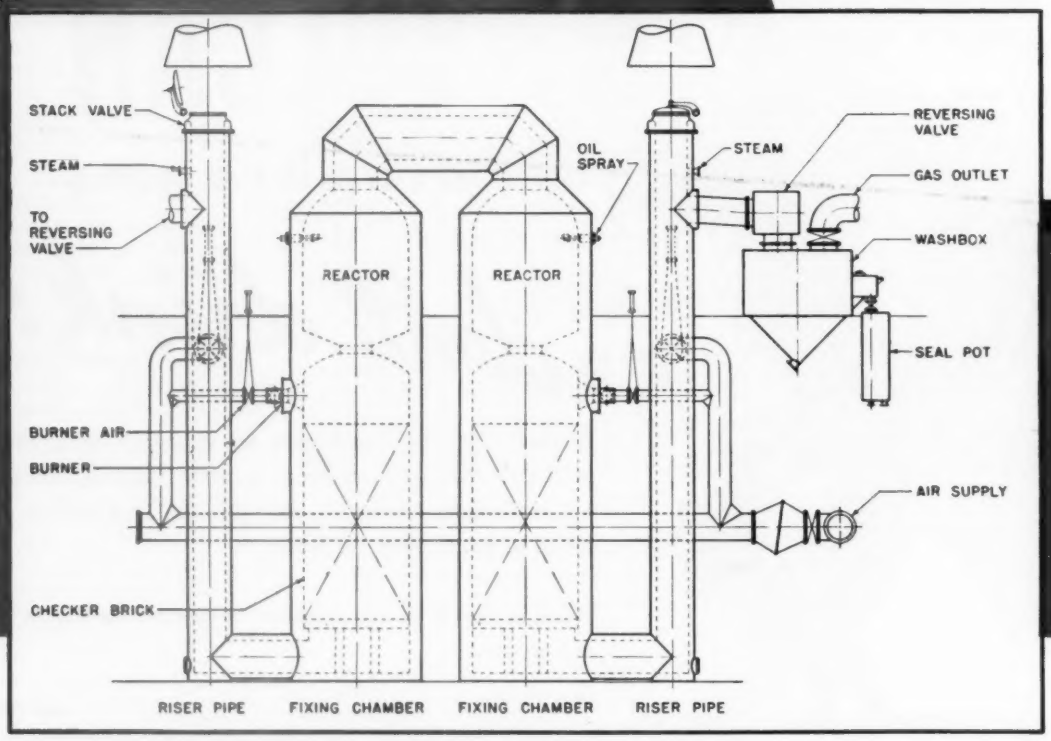
Highly Resistant to Moisture and Solvents

VULCAN RUBBER

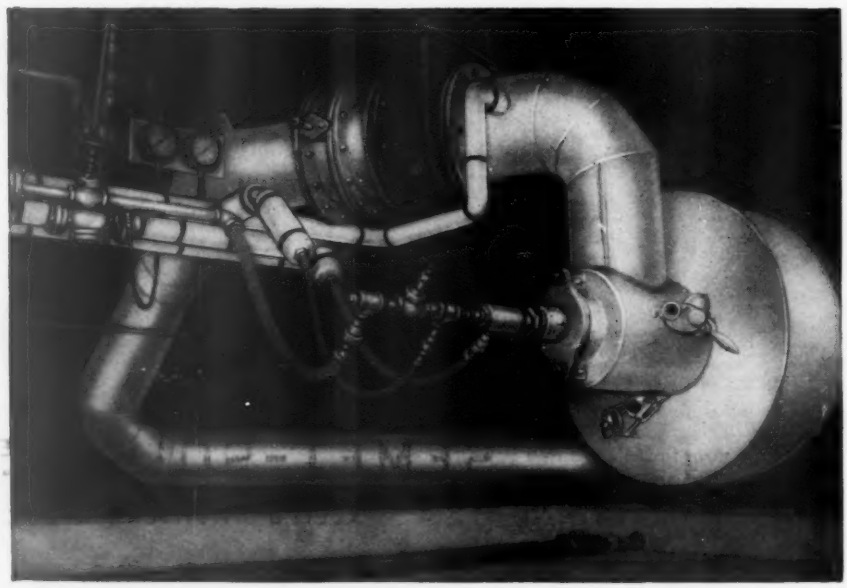
PRODUCTS, INC.

58th Street and First Avenue • Brooklyn 20, N. Y.

...let's examine SEMET-SOLVAY'S



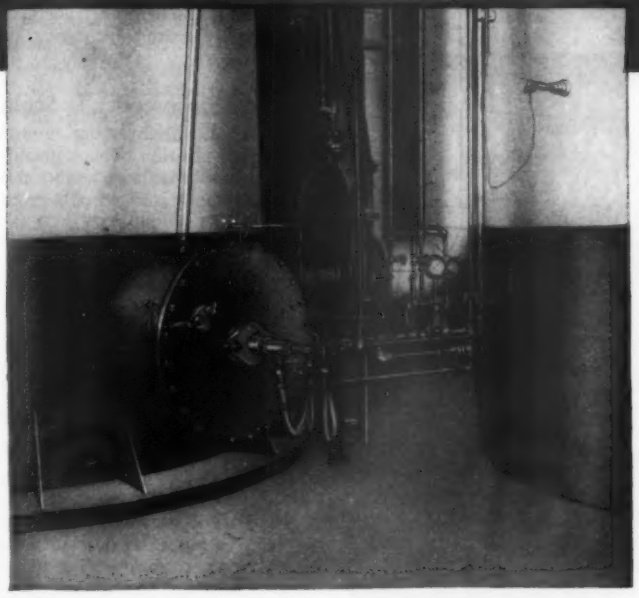
Semet-Solvay two shell, four-chamber regenerative reverse flow high BTU oil gas unit. U. S. Pat. No. 2,605,176.



Oil burner, regenerative unit.

amazing record of HIGH BTU GAS INSTALLATIONS—

About three years ago Semet-Solvay introduced its regenerative and non-regenerative high BTU Oil Gas Processes to the gas industry. *Since then* 43 machines have been converted to the non-regenerative Poughkeepsie process; 8 machines to the regenerative process. In addition one 13′ diameter two shell, four-chamber unit is now under construction. Such an outstanding record speaks for itself.



Oil burner, non-regenerative Poughkeepsie process.

Why have so many gas men favored these Semet-Solvay Processes? Here are a few reasons:

- Counter flow and reverse flow principles are used in the design.
- Ability to gasify light or heavy oils with no operating difficulties.
- Checkerless reactors (cracking chambers).
- High production capacities.
- All auxiliary equipment is expertly engineered (i. e. oil burners, oil steam purge units and hydraulically operated valves).

For additional information see us in Atlantic City, booth #230, or at our suite in the Ambassador Hotel.

SEMET-SOLVAY ENGINEERING DIVISION
40 RECTOR ST., NEW YORK 6, N.Y.
ALLIED CHEMICAL & DYE CORPORATION

Broader Information Essential To Attract Individual Investor

(Continued from page 20)

cult, if not impossible, to average for the industry because of the different rate of return yardsticks employed in each specific instance.

Prognostication along this line certainly could not be done effectively over the five or ten year span recommended by Mr. Murray. Until the yardstick which may be applied to industry earnings under FPC decisions becomes more clearly delineated, the natural gas company equities would seem to be out in the cold so far as even limited investment by savings banks is concerned.

With the Federal budget unbalanced and further deficits in sight because of increasing use by the Government of tax anticipation notes, a 1953 reduction in Federal income taxes—major or minor—looks more dubious by the day. In the event the excess profits tax should be allowed to lapse at its present expiration date of June 30, 1953 (as some people consider possible), it probably would have to be replaced by a hike in the corporate normal and surtax rate from its present 52 per cent. Such an occurrence would adversely affect the utilities which have little shelter under Excess Profits Tax.

The utility industry has been giving a better account of itself from an earnings standpoint than has industry as a whole, with an average year-to-year gain of eight per cent in the June quarter of 1952 against a decline of 13.5 per cent for all industry. Only the highly cyclical defense-stimulated aircraft manufacturers were able to better the utility industry record.

Dividend news of late has not been as favorable as heretofore, with omissions or reductions outpacing increases by a three-to-two margin in September, against a three-to-one ratio of dividend gains to casualties in the comparable 1951 month.

The bond market also might stand a bit of watching in view of the Government bonds dropping to a new low at this writing. The drop occurred on an extremely thin market, and recovery might occur just as fast on the same type of market. The corporate list, of late, has done well in the face of a not-too-good Government market, and a favorable factor is that there currently is no inventory of new corporate obligations on underwriting dealers' shelves and the volume of new offerings on the horizon is not large.

What does

"GAS INSURANCE"

mean to you?

Gas insurance means added gas supply that is always there when you need it, regardless of the weather or the load. A DRAKETOWN Propane Plant means gas supply you can control manually by the turn of a valve or completely automatic, if you prefer.

If you want to reduce high demand charges, shave peaks, augment your present supply or use for 100% town supply at no loss of production or efficiency—a DRAKETOWN plant is designed, engineered and built to meet your every specific requirement.

DRAKETOWN

Your assurance of a good job

Serving utility and industry for over thirty years

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FOR REPAIRING BELL AND SPIGOT JOINT LEAKS...

SKINNER-SEAL Bell Joint Clamp for stopping bell and spigot joint leaks under pressure. Gasket is completely sealed: at bell face by Monel Metal Seal band—at spigot by hard vulcanized gasket tip.

AND BROKEN MAINS

SKINNER-SEAL Split Coupling Clamp. One man can install in 5 to 15 minutes. Gasket sealed by Monel band. Tested to 800 lbs. line pressure. A lasting repair. 2" to 16" incl.

M. B. SKINNER CO.

SOUTH BEND 21, INDIANA, U.S.A.

MEN AT WORK

L. A. Dixon Is Rockwell VP

L. A. Dixon, Jr., has been appointed vice president, meter and valve division, Rockwell Manufacturing Company, to coordinate the sale and manufacture of meters, regulators and Nordstrom valves.

L. A. Dixon

Most recently, Mr. Dixon was assistant vice president of the meter and valve division. Previously, he was with the Pittsburgh-Dubois Company and in 1944 was made executive vice president. When Rockwell Manufacturing Company acquired Pittsburgh-Dubois, in 1947, he became general manager. Subsequently, he was transferred to the Rockwell offices in Pittsburgh.

R. H. Morris Is Mueller Sales VP

Robert H. Morris has been named general sales vice president, Mueller Co. This represents an advancement from his previous position as sales manager of the company. Mr. Morris joined Mueller Co. in 1947, as a sales representative in Florida and Georgia. He was transferred to the company's Decatur, Ill., office in 1951.

S. L. Steinwender Is Scaife VP

Sheller L. Stienwender was appointed to the new position of vice president, sales, Scaife Company, in an action at a meeting of the company's board of directors.

HOWARD P. BERGER is now in the Cleveland office, Wheelco Instruments division, *Barber-Colman Co.*

RUTH BREZELLE is now home economist, Pittsburgh group, *Columbia Gas System.*

EDNA ANN FOY CLARK has been appointed home economist, Pittsburgh group, *Columbia Gas System.*

HAROLD F. DAHLKE is now in the New York office of Wheelco Instruments, *Barber-Colman Co.*

DOROTHY FARRELL has been appointed assistant to home service supervisor, Pittsburgh group, *Columbia Gas System.*

FREDERICK C. GILMAN was appointed research engineer, *Worthington Corp.*

SARA LOU GLUNT has been appointed home economist, Pittsburgh group, *Columbia Gas System.*

RUTH ANN HARDING has been appointed director of home service publications, Pittsburgh group, *Columbia Gas System.*

MELBA JO HARMER has been appointed home economist, Pittsburgh group, *Columbia Gas System.*

T. A. HERMAN has been appointed assistant chief engineer, reciprocating engineering division, *Worthington Corp.*

HELEN LEE HIRSCH has taken charge of home service activities, new auditorium,

The Manufacturers Light and Heat Co., Pittsburgh.

MAX HOSMER has been advanced to assistant advertising manager, Duo-Therm division, *Motor Wheel Corp.*

GORDON HUBBERT is now district manager, Detroit office, Wheelco Instruments division, *Barber-Colman Co.*

RICHARD K. HUNGERFORD is now district manager, Baltimore office, Wheelco Instruments division, *Barber-Colman Co.*

ALBERTA JACKSON has been appointed home economist, Pittsburgh group, *Columbia Gas System.*

FRANK D. JERNIGAN now supervises accounting, *Southern Union Gas Co.*

ROBERT P. JETT has been appointed to director of sales planning, *Mueller Co.*

WALTER LAMBERT was appointed to the Pittsburgh office, *The Trane Co.*

MARY FRANCES LENNON has been appointed supervisor, home economics department, Pittsburgh group, *Columbia Gas System.*

ROBERT K. LEVEY has been advanced to general sales assistant vice president, *Mueller Co.*

STANLEY MANGHAM was appointed sales representative, Atlanta office, *The Trane Co.*

MARTHA MASON has been appointed as a home economist, Pittsburgh group, *Columbia Gas System.*

RICHARD A. MATHEIS was appointed to the Pittsburgh office, *The Trane Co.*

JOHN S. MCELWAIN has been advanced to assistant general sales manager, *The Peoples Natural Gas Co.*, Pittsburgh.

NORMAN L. MEYERSON was appointed assistant manager, research and development department, *Worthington Corp.*

MILDRED MAE NASER has been advanced to supervisor, home economics department, Pittsburgh group, *Columbia Gas System.*

CECIL B. OAKLEY has been promoted to sales manager, *Temco, Inc.*

WILLIAM C. OSBORNE was appointed manager, research and development department, *Worthington Corp.*

ROLAND R. PAULIN has been appointed manager of operations, *Michigan Consolidated Gas Co.*

CARRYL H. PUGH has joined the retail sales development department, *Servel, Inc.*

MARY LENORE RETZER has been advanced to supervisor, home economics, Pittsburgh group, *Columbia Gas System.*

HELEN ROSE RUDDICK has been appointed home economist, Pittsburgh group, *Columbia Gas System.*

KARL E. SCHMIDT has been appointed engineer, *Michigan Consolidated Gas Co.*

ANNE ELIZABETH WEBBER has been appointed home economist, Pittsburgh group, *Columbia Gas System.*

BAY F. WOMBACKER was elected assistant treasurer, *Southern Union Gas Co.*

Transcontinental Ups Capacity

Transcontinental Gas Pipe Line Corporation has announced that completion of additional compressor units increased its daily delivery capacity to the authorized maximum of 555 MMcf. Beginning this month, Transcontinental's actual deliveries are expected to average more than 500 MMcf a day.

NEW BULLETINS

HEAT PROCESSING BATCH LIQUIDS WITH DURADIANT CLUSTERS. This new bulletin described fully the application of radiant gas equipment to batch cooking of materials such as resins, varnishes, oils, inks, greases, acids and alkalis. The bulletin states that features of this combustion method include uniformity in heating to meet exact product requirements, speed of heating, controllability, flexibility and the absence of flame impingement on kettles. A number of typical installations are shown with their general operating conditions.

Bulletin SC-1015. Pp. 12. Selas Corporation of America, Philadelphia 34.

SELAS DEHYDRATORS. Continuous removal of water vapor from air and other gases that are used in combustion and industrial processing is described in this bulletin. Considerations that are pertinent to dehydration problems are discussed fully and the operation of the equipment is described and illustrated. Specifications for three series of this equipment are given and a nomograph is provided for preliminary determination of equipment size. The manufacturer also provides a separate data sheet for more detailed information, to be returned to the manufacturer for more precise equipment recommendations. The bulletin states that the equipment is capable of removing moisture from gases to low concentrations and cites that compressed air can be dried to the dew point of minus 100°F.

Bulletin SC-1013. Pp. 12. Selas Corporation of America, Philadelphia 34.

MANUAL ON MANOMETERS. This manual includes basic information and definitions on pressure measurement and the operation of various types of manometers with detailed information on installation, operation and maintenance.

Bulletin 313. 12 pp. King Engineering Corp., 400 Detroit St., Ann Arbor, Mich.

TEMPERATURE AND CORROSION RESISTANT COATING. This set of information sheets pertains to a silicone-aluminum coating that is said to resist weathering and temperatures to 1000°F. The manufacturer states that the material is applied by brush, spray or roller. The material is resistant to weathering and salt spray, dilute acids and alkalies at raised temperatures. Suggested applications include boilers, pipes, chimneys, conduits, and processing kettles.

Lankote 620. J. Landau Co., 221 Wooster St., New York 12.

BRONZE SAFETY GAS CONTROL COCK. This information sheet gives complete information and specifications for safety gas control cocks that range in size from ¼" to 2". The manufacturer indicates Factory Mutual approval. Testing instructions are given.

Bulletin 1002. 2 pp. The D. T. Williams Valve Co., 1086 Summer St., Cincinnati 4.

PROTECT AGAINST COMBUSTIBLE GAS. Portable and fixed gas detectors, with and without alarms, are the subjects of a new bulletin that describes their operation and applications. Factory Mutual approval is indicated for these instruments. Complete specifications and prices are included.

Bulletin FSE 1251. 4 pp. Johnson-Williams, Ltd., Palo Alto, Cal.

SIMPLIFIED INCENTIVE TOOLS. This is a kit of information pertaining to incentives used to heighten sales-application in campaigns. The kit contains sample copies of five prize broadsides, with merchandise prizes ranging from $5 to $25, at wholesale. Also included are ideas and instructions on how to use the broadsides as sales incentive.

Cappel, MacDonald & Co., Dayton 1, Ohio.

MEASUREMENT AND CONTROL OF LP GAS. This new bulletin catalogs equipment for measurement and control of LP gas in both the liquid and vapor phase. Included are meter service cocks, gas appliance regulators, test meters, indicating liquid bulk meters and large capacity meters with combined recording gauge. Complete specifications are given for each piece of equipment. There is also adequate description indicating applications of the equipment and conversion tables for varying conditions.

Bulletin C-5100. 12 pp. Rockwell Manufacturing Co., Pittsburgh 8.

(Continued on page 42)

Blaw-Knox Expands Tulsa Office

The Tulsa office of the Chemical Plants division, Blaw-Knox Company, has been expanded and reorganized to become a complete operating unit known as the western headquarters. F. Drake Parker has been appointed manager.

Penn Instrument Appoints Eggelhof

Penn Industrial Instrument Corporation, Philadelphia announces the appointment of Eggelhof Engineers, Inc., as its representatives in the Texas-Oklahoma area, with officers in Houston, Dallas, Corpus Christi, San Antonio, Shreveport, Tulsa and Fort Worth.

Harold Langdon Gaidry

Harold Langdon Gaidry, principal gas engineer for New Orleans Public Service Inc., died September 27. He was 54 years old.

Mr. Gaidry, a native Louisianan, attended Tulane University in New Orleans, where he received his bachelor's degree in engineering in 1923.

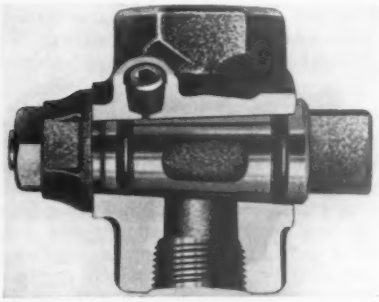
In 1924, he joined Public Service as an equipment engineer in the railway department. He then moved to the company's gas department and later was appointed principal gas engineer in the central engineering department.

Mr. Gaidry was a member of American Gas Association, serving at various times as chairman of the distribution committee, chairman of the technical section, and vice-president. He was also a member of the American Public Works Association, the National Association of Corrosion Engineers, the American Water Works Association, the Chamber of Commerce of the United States, the New Orleans Chamber of Commerce, and the Young Mens' Business Club of New Orleans.

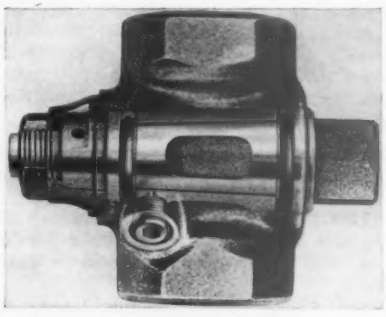
NEW EQUIPMENT

Gas meter stop

This new gas meter stop is a development which the manufacturer claims will provide for a safer and easier-to-turn stop with a



longer service life. It consists of an iron body, brass key, plug stop, with a streamlined gasway for maximum gas flow and key strength. False ports protect the precision-ground and -lapped facing members. These stops are assembled at the factory without greasing, tightened to the point of key-to-body contact, then the special tamper-proof washer is drilled with a blind-hole and pinned to the large boss on the bottom of the key in perfect adjustment for the life of the stop. Perfect sealing of the key ends is accomplished by using synthetic gas-resistant "O" rings which seal the stop effectively at as high as 25 times the pressure where ordinarily stops leak, the manufacturer states. The stop is greased through a small tapped-and-plugged hole in the stop body.

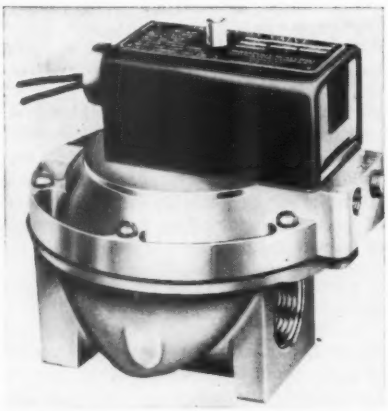


This hole lines up with four machined vertical grooves in the key surface. Grease is forced through the hole, into the body, at sufficient pressure to completely fill the grooves, lubricate the ground key surfaces and to compress the "O" rings. As the stop is operated, the "O" rings slowly regain their original shape, thus maintaining pressure on the grease and distributing a grease film of proper thickness for easy-turning, long-life and best pressure-sealing qualities. The manufacturer states that tests reveal that these stops were practically in original condition after 25 times the number of operations where stops ordinarily turn hard and leak. After long use, the holding and turning qualities of the stop are restored by refilling with grease. These stops are available in sizes from ¾" to 2", with straight head or lock wing.

LubOseal Gas Meter Stop. Mueller Company, Decatur, Ill.

Gas valve

A new diaphragm gas valve that is interchangeable with standard solenoids and operates on all gases has just been announced.



Cast aluminum body and housing, larger pilot passageways and a three-ply diaphragm using a nylon interior sandwiched between Buna-N rubber are features that were built into the new valve to minimize servicing. The control is available in a variety of models, sizes and voltages. The V499 is adapted for A.C. or D.C. line voltage, while the V899 is designed for low A.C. voltage. Both of these are offered in three models, in five sizes ranging from ¾ inch to 2 inches. They provide a choice of manual opener, no manual opener or manual opener with automatic recycling. The compactness of the control allows it to fit into small spaces. It meets all local codes and gas utility requirements for all gases.

Diaphragm Gas Valve. Minneapolis-Honeywell Regulator Co., Minneapolis 8.

NEW BULLETINS

(Continued from page 41)

PIPELINE INSTRUMENTATION DATA SHEETS. This set of three sheets is designed to provide engineers in the natural gas industry with information for the operation of the company's control equipment. Flow metering and control, flow pressure compensating limit controls, and flow and pressure controls are the subjects.

Data Sheets 783-15, 16, and 17. Pp. 6. The Foxboro Co., Foxboro, Mass.

MAINTENANCE AND REPAIR MANUAL, NORDSTROM VALVES. This fully illustrated and descriptive manual gives instructions for all phases of maintenance and repair of the company's valves. The illustrations include cutaways of the equipment with clearly understandable indications of the parts and their functions. The manner of lubricating, servicing and assembling is shown in a step-by-step manner. Included is a series of photographs of all parts in specific valves, identified by catalog number.

Bulletin V-206. 44 pp. Nordstrom Valve Division, Rockwell Manufacturing Co., Pittsburgh 8.

EMCO "1001" REGULATORS. This revision of a previously issued bulletin brings up to date the full description and engineering information on this line of regulators. They are adaptable to natural, manufactured and LP gases. The bulletin includes information and data on where the regulators are used, how they work, sectional views, performance curves, capacity ratings, servicing information, parts identification and ordering information.

Bulletin 1059-2. Pp. 16. Pittsburgh Equitable Meter division, Rockwell Manufacturing Co., Pittsburgh 8.

FIELD REGULATORS. The regulators described in this bulletin are for use at wells, on transmission lines and at points of consumption. They include both the spring type and the lever and weight type. This bulletin gives the necessary information for selection and also includes specific information on installation and servicing.

Bulletin 1024-3. Pp. 8. Pittsburgh Equitable Meter division, Rockwell Manufacturing Co., Pittsburgh 8.

ROCKWELL "120" REGULATORS. The regulators covered by this bulletin are for large appliances, industrial furnaces, gas engines and similar appliances. This bulletin is fully descriptive of the application and operation of the regulators with typical performance curves, sizes and capacities, parts list and installation and operation instructions. Specific instructions for ordering are included.

Bulletin 1044-4. Pp. 16. Rockwell Manufacturing Co., Pittsburgh 8.

EMCO PILOT LOADING SYSTEM. This system of pressure regulation for application to the company's high pressure balanced valve regulators is described and color-illustrated for immediate understanding of the application and operation of the equipment. The use of the system with remote control is fully described. Equipment specifications and ordering information are included.

Bulletin 1055-2. Pp. 14. Pittsburgh Equitable Meter division, Rockwell Manufacturing Co., Pittsburgh 8.

GAS CONTROLS. A new bulletin describes with words, pictures and diagrams the operation, installations and adjustment of automatic controls for water heaters.

Bulletin V5. Minneapolis-Honeywell Regulator Company, Merchandising division, Minneapolis 8.

TUNNEL BURNER. Assemblies and gas burner nozzles of the sealed-in type are presented in this bulletin with capacities and dimensions. Twenty burner sizes are included.

Bulletin 807. Pp. 4. Hauck Manufacturing Co., 124 Tenth St., Brooklyn 4.

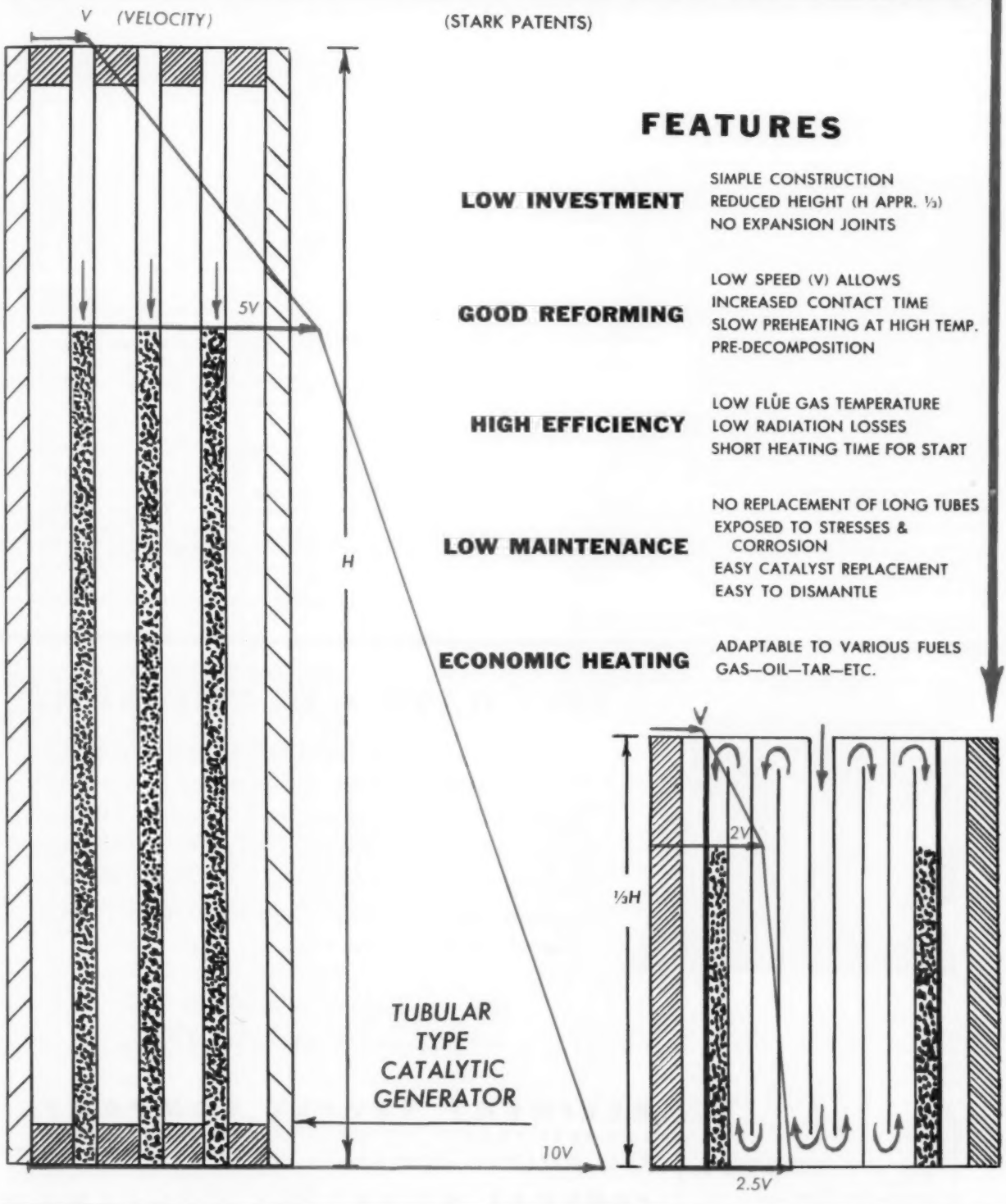
PHENOLIC RESIN COATING, BAKED ON. The coating described in this bulletin is designed to provide for protection in piping against corrosive conditions. Application photos are included and typical applications are listed.

Bulletin S-5252. Pp. 4. Ric-Wil Plastic Coating and Manufacturing Corp., 1290 Euclid Ave., Cleveland 15.

PHENOLIC RESIN COATING, COLD SETTING. The coating described in this bulletin is for application to industrial and process equipment. Resistance tests, physical properties and methods of application are described.

Bulletin S-5251. Pp. 4. Ric-Wil Plastic Coating and Manufacturing Corp., 1290 Euclid Ave., Cleveland 15.

CONCENTRIC CATALYTIC GENERATOR



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PAUL KAYSER
President
El Paso Uatural Gas Company
speaking as retiring president
Independent Natural Gas Association
at the annual meeting
in Omaha on October 6.

VOLUME OF STRAIGHT GAS UTILITY FINANCING

1946-1952, by type of issue
($ millions)

	All Straight Gas Companies				Straight Natural Gas Companies			
	9 Mos. 1952	Year 1951	Year 1950	Average 1946-49	9 Mos. 1952	Year 1951	Year 1950	Average 1946-49
Total	437	909	756	430	395	826	709	390
Common stock	45	54	67	135	39	52	54	35
Preferred stock	90	74	69	15	84	72	61	14
Debt	301	781	619	379	272	701	594	340
Bonds	255	562	387	276	235	510	373	248
Debentures	10	94	99	53	8	88	94	47
Other	36	124	132	50	29	103	127	44

MEN AT WORK

Hodgdon Assists AGA Lab Director

Frank E. Hodgdon has been appointed assistant to the director, American Gas Association Laboratories.

In his new position, Mr. Hodgdon will perform general administrative duties. He will also have direct supervision over the Laboratories building and equipment. In addition he will act as personnel director. He succeeds B. A. McCandless, who has been transferred to American Gas Association Headquarters.

Associated with the Laboratories since 1939, Mr. Hodgdon has served in numerous engineering assignments. Most recently, he was chief methods engineer.

Howard W. Scott has been appointed chief methods engineer, succeeding Mr. Hodgdon.

Brown is VP-GM, S Indiana Co

A. B. Brown recently was elected executive vice president and general manager of Southern Indiana Gas and Electric Company, Evansville. Also, he was elected a director o fthe company. F. B. Culley continues as president of the company.

For complete specifications write for Bulletin 50

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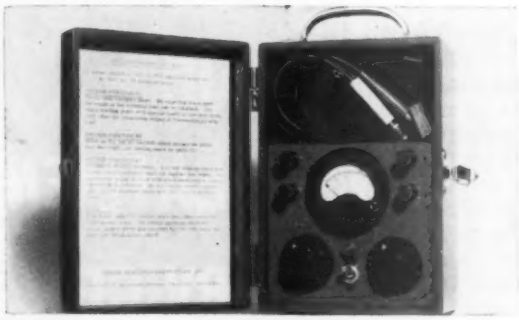

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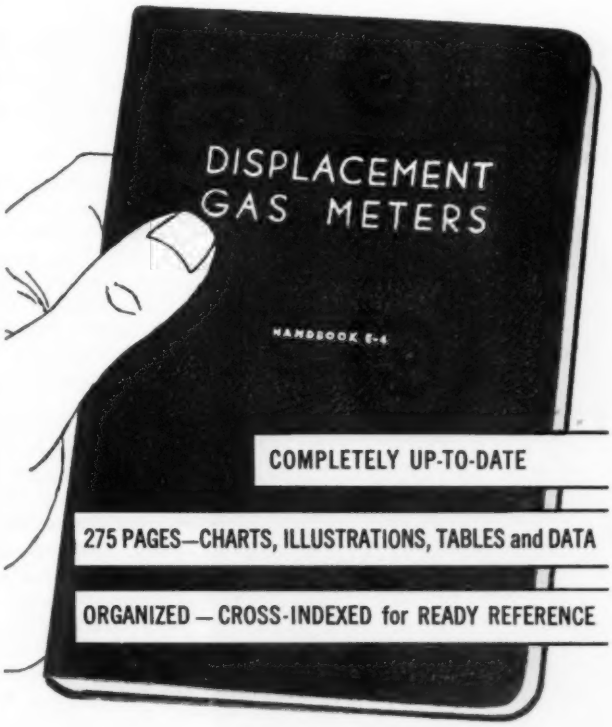

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THE TINNED STEELCASE METER
THE IRONCASE METER
CAPACITIES OF METERS
THE MEASUREMENT OF GASES AT HIGH PRESSURE AND VACUUM
THE METER PROVER
TESTING METERS FOR PROOF
TESTING HIGH-PRESSURE METERS
PRINCIPLES OF METER MAINTENANCE
LEAK TESTS AND APPARATUS
FITTING ADJUSTMENT
STANDARD REPAIR PROCEDURES
REPAIRING TINNED STEELCASE METERS
REPAIRING IRONCASE METERS
INDEX

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AMERICAN METER COMPANY
INCORPORATED (ESTABLISHED 1836)

Jacobs Stresses Need for Effective Appliance Promotion

(Continued from page 17)

ciation, as a winner of the Association's awards and through activity in PCGA section or committee work. Of the thirty-four charter members, six have earned more than one hundred points, these being W. M. Henderson, Guy Corfield, F. M. Banks, A. F. Bridge, H. L. Masser and Frank Wills.

Some PCGA awards

An individual Gold Medal award went to R. M. Crosby, Southern California Gas Company, for his contributions of art and printing "know how" to the promotion committee of the sales and advertising section. A committee award, with a gold medal to the chairman, went to the FHA-VA Regulations committee, sales and advertising section, for its successful effort to show these government agencies the importance of the relationship of the PCGA water heater sizing schedule to hot water adequacy in new homes. The committee chairman was J. L. Hall, Southern California Gas Company.

Committee awards also went to the committee on destruction of records in the accounting section, for its success in securing approval both of California utility companies and the Public Utilities Commission to a workable schedule for the preservation and destruction of utility records; and to the transmission procedures committee in the technical section, for developing safe procedures for repairing large diameter pipe lines under high pressures.

The Basford Trophy was awarded to the technical section, under the chairmanship of J. R. Rensch, Coast Counties Gas and Electric Company.

New association officers

Officers of PCGA for the coming year are J. S. Moulton, Pacific Gas and Electric Company, president; W. C. Mainwaring, British Columbia Electric Company, vice president; Harry McGann, Pacific Gas and Electric Company, treasurer; Grover S. Tracy, Pacific Gas and Electric Company, assistant treasurer; T. T. Arden, A. R. Bailey, W. J. Bailey, C. P. deJonge, C. H. Gueffroy, W. M. Jacobs, R. T. Richards, J. D. Roberts and F. B. Wright, directors. Clifford Johnstone will continue as managing director, with J. E. Kern, as assistant manager.

Detroit Lubricator Co. Name Changed

The name of the Detroit Lubricator Company has been changed by its board of directors, to The Detroit Controls Corporation, for more accurate description of its present product. There will be no change in operating personnel; the company continues as a division of American Radiator & Standard Sanitary corporation.

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EUROPE'S GAS INDUSTRY MODERNIZING

When the Schuman Plan becomes fully effective in Europe, the lifting of some customs barriers will affect the gas industry directly through the lowering of coke prices and broadening its availability, in the opinion of Virgil Stark, president, North American Utility and Construction Corporation.

The observations which follow are based on his most recent trip from which he returned in late September.

The Gas Industry in Europe, Mr. Stark points out has been operated for decades mainly on coal as the basic fuel, with coke the principal by-product. As the production cost of gas has greatly increased since the war governments have generally allowed higher sales prices for coke to compensate in part these increases, where keeping gas rates down.

The Schuman Plan will liberate the custom barriers between European countries and will affect the gas industries by lowering the price of coke and amplify its availability. The surplus of coke on the markets at lower prices will therefore affect the gas industries and make coal gas production less economical.

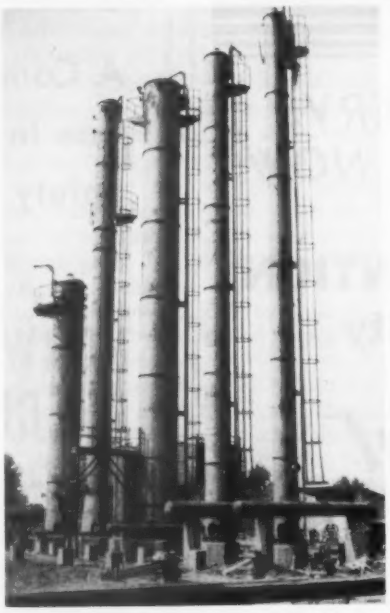
Other fuels are now becoming available in Europe in increasing amounts. Refinery capacities handling near eastern oil have been greatly increased especially in France, Italy, England, Belgium, Holland and West Germany. Heavy oil which represents approximately 25 per cent of the crude oil refined will be available in excess of demand in some countries.

Propane and butane which were produced only in small quantities before the war, are becoming available in large quantities. England, France and Germany will each produce approximately 35 million gallons per year, an amount which is in excess of present demands. Italy, which imported propane until now will have approximately 15 million gallons per year from the refineries and approximately 10 million gallons per year in addition from the natural gas extraction plant of Cortemaggiore. This plant handling 100 MM cu ft per day of natural gas, the largest of its kind in Europe, was supplied by North American Petroleum Gas Corporation and put into operation this summer.

Natural gas is becoming increasingly available in certain locations such as Italy (approximately 300 MM cu ft per day), South Western France, and recently northern Holland. Grisou Gas from coal mining, containing approximately 80 per cent methane, is beginning to be used in Belgium.

There is a trend to use not only coal but other fuels for the production of utility gas, although whenever available natural gas will be used. In some cases natural gas is being reformed. North American Utility & Construction Corporation has plants under erection in Milano and a catalytic plant for reforming either propane or natural gas in Venice. France and Belgium are also reforming either natural gas or Grisou Gas in certain locations (Bordeaux, Paux, Toulouse).

Propane begins to be used for conversion of smaller coal gas plants in propane air or undiluted propane plants. North



Europe's largest gas extraction plant, in Cortemaggiore, Italy, has a daily capacity of 100 MMcf.

American Petroleum Gas Corporation has supplied equipment for twenty-six such plants for France and others for Italy, Belgium and Holland. The price of propane is still relatively high (at refinery approximately 20 cents per gallon in Italy, 12 cents per gallon in France and 10 cents per gallon in Holland). Bottled gas has developed in certain countries (France approximately 2,000,000 accounts), and is increasing in England, Belgium, Denmark, Germany, etc.

Italy has had the most spectacular increase in LP-gas usage, accounts going from practically nothing in 1946 to approximately 900,000 in 1952. The average price of bottled gas which had been approximately $19 per 100 lbs. in Italy has been reduced approximately 10 per cent since the Cortemaggiore Plant went into operation.

Heavy oil is being studied as gas making fuel especially in France. *Gas de France* has put in operation in Paris an oil gas generator, converting a carburated water-gas set to a Hall set. They will reform part of the oilgas in a catalytic generator.

Nationalization of the gas industries in England and France have effected numerous combinations of the old gas plants. This is evident especially in France where small uneconomical gas plants have been either closed and supplied by pipelines from larger ones, or converted to propane air.

The heat content of gas has been increased in France from 380 Btu to 450 Btu and a similar step may be taken in Italy. The trend is to keep the heat content constant and much automatic control equipment is being supplied for use in France, Italy and Belgium.

In summary Mr. Stark reports that the European gas industry is undergoing extensive modernization and is taking advantage of different fuels and new techniques available.

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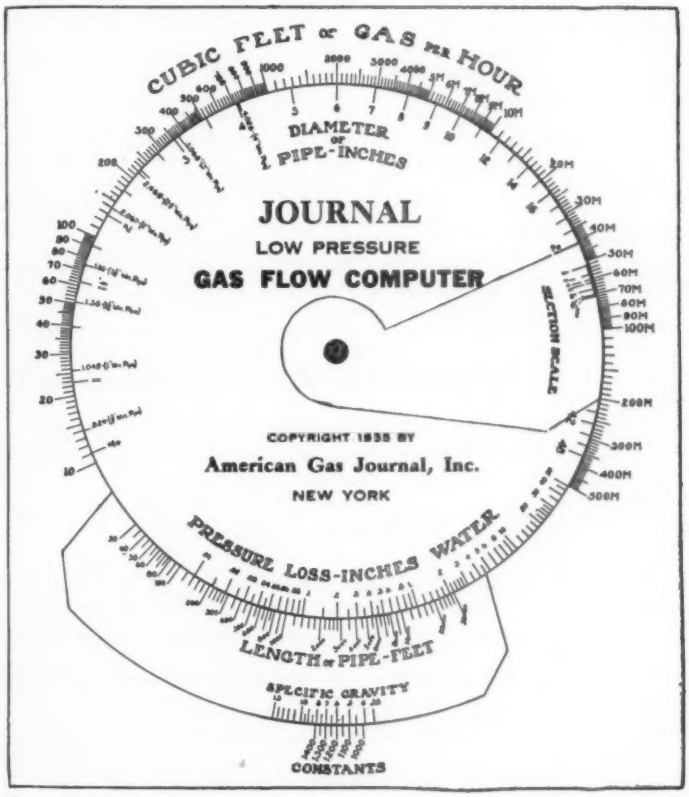

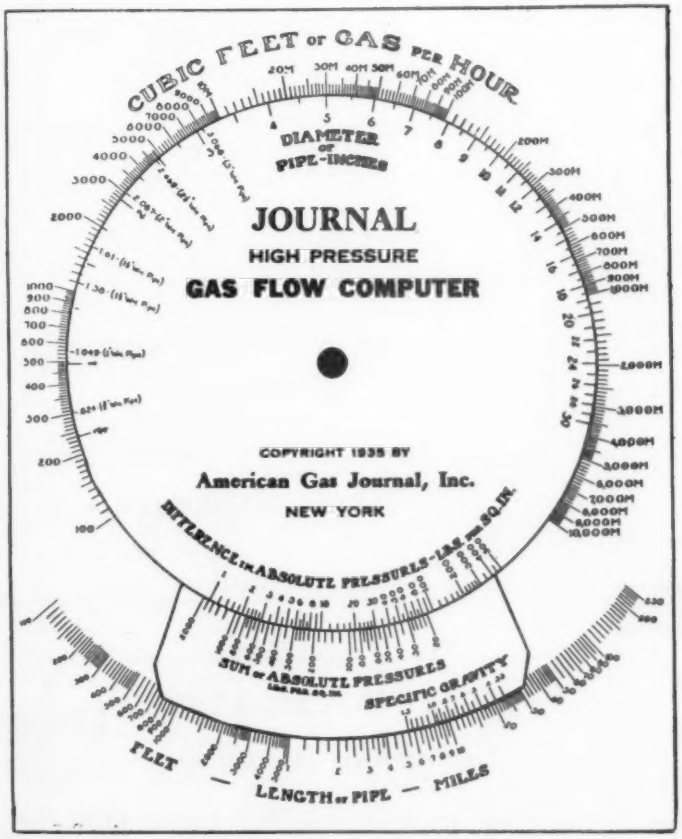

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GAS INDUSTRY CALENDAR

October

27-30 AGA annual convention, Atlantic City.
27-31 GAMA exposition, Atlantic City.
28 AGA executive board, Atlantic City.
30 LPGA northeastern annual meeting, Ambassador Hotel, Atlantic City.

November

10-14 National Hotel Exposition, Grand Central Palace, New York.
13 AGA commercial gas breakfast, Hotel Roosevelt, New York.
20-21 Mid-Southeastern Gas Assn., Sir Walter Hotel, Raleigh, N. C.
20-22 South. California Meter Assoc., instrument maintenance course, Los Angeles Harbor Jr. College

February, 1953

2-4 AGA Home Service workshop, Baker Hotel, Dallas.

March, 1953

16-20 National Association of Corrosion Engineers, Hotel Sherman, Chicago.
26-27 NEGA, Hotel Statler, Boston.
27-29 Mid-West regional gas sales conference, Edgewater Beach Hotel, Chicago.
30-Apr. 1 Mid-West Gas Assn., Broadmoor Hotel, Colorado Springs, Colo.

April, 1953

12-16 AGA distribution, motor vehicles and corrosion conference, Hotel Sherman, Chicago.
13-15 AGA Industrial and Commercial Gas Sales Conference, Hotel Warwick, Philadelphia.
16-18 Florida-Georgia Gas Association, Hotel Biltmore, Palm Beach.

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